The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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Casting Steel Ingots to Specified Weight.

In the manufacture of steel there is room for many minor economies, large in the aggregate, in works turning out enormous quantities of finished product. Increased attention is paid both in this country and abroad to a refinement of detail calculated to secure a cheaper product, and it is to an effort in this direction made in Austria that we wish to present to American steel makers. The weight of ingots is determined by that of the finished product, an allowance being added for waste by oxidation and trimming. The only means available until now to approach the weight thus calculated was by marking the hight to which the mold was to be filled. This method of casting the ingots to a specified weight requires much skill and is unsatisfactory, because variations in the dimensions of the molds, due to warping and strong movements of the steel during the casting, render it inaccurate. The temperature of the steel, when being cast, considerably affects the weight of an ingot obtained by pouring until a mark is reached, it having been proved experimentally that the difference was as much as 6.6 per cent. It is current practice, therefore, to cast ingots of excessive weight. With steel rails this entails the make of from 12 to 15 per cent. of crop ends, a quantity which could be reduced by more than one-half if practical means were devised to cast ingots closer in weight to the finished product. When it is considered that this represents a saving between the value of the finished article and the value of the scrap made ordinarily, it will be understood that the preventable loss in working, as at present, is very considerable.

These considerations have induced Herr Ferdinand Moro, of the Kladno Steel Works, Austria, to construct an apparatus capable of weighing an ingot while it is being cast, so that the scale will furnish an indication when to stop. Herr Moro clearly saw that the requirements which such an apparatus must meet must be the following: While being simple, strong and as small as possible, so as not to occupy much room in the pit, it must be readily accessible and easily moved from one mold to the other, and entirely taken away in the case of danger to it by the leaking of molds and kindred accidents. An examination of the illustrations given will show by what means he has sought to accomplish this end, and we would add that the drawings given show only one of a number of modifications in detail of the apparatus designed upon the same general plan. As seen in Fig. 1, the molds are placed upon bottom plates, as usual, resting, in their turn, upon U-shaped frames attached to a bottom plate. It is in this manner that sufficient room is provided underneath the molds for the introduction of the weighing apparatus. The latter consists of a beam scale, the frame of which is supported by small hydraulic cylinders, shown in section in Figs. 1 and 2. These hydraulic cylinders, in their turn, are screwed to a part somewhat resembling a shovel, the handle of which can be moved forward and backward by a rack and pinion. To it are attached the standard of the scale and a small hydraulic pump, connected by copper pipe with the small hydraulic cylinders. The whole apparatus is carried by a truck running on rails laid along the line of molds.

By two turns of a crank the scale is pushed underneath the mold plate until the slanting lower surface of the "shovel" rests upon the base plate, thus relieving the truck frame of the weight of the mold. Instead of lifting the body to be weighed upon the scale as usual, the latter is raised underneath it in this case. This is effected by three or four strokes of the pump. The pump is so constructed that the water is drawn from a small tank attached to the truck when the piston is raised. When it is lowered, the water is forced through a small copper pipe under the four pistons lifting the scale. In order to lower the scale the water is allowed to flow back to the tank by turning a valve.

The weighing apparatus is removed and taken to the next mold during the time that the steel is flowing into it, so that the casting is not delayed. Before casting, it is necessary to know the weight of the empty mold. This is done either by weighing each separately and marking the weight on each in large figures, or by making the weight of all equal. Herr Moro states that in the beginning he feared that the force of the stream flowing into the mold might cause the beam to oscillate, and thus render it difficult to recognize the correct point. It was found, however, during the work at Kladno that there was no danger of this, and the apparatus has worked with satisfaction at those works since the beginning of the present year.

As we have already stated, Herr Moro has designed numerous modifications, of which we would call attention only to that represented in Fig. 3. Its operation will be readily understood from the drawing. The apparatus is quite small, the scale of our drawings, Nos. 1 and 2, being approximately 1 inch to a foot.

The most novel exhibit shown at the Brussels National Exhibition by the Seraing Works is a certainly remarkable casting. It consists of what is practically the whole cast-iron work of a marine engine, with a pair of cylinders about 20 inches in diameter by 20 inches stroke, cast in one piece—bedplate, condenser, air and feed and bilge pumps, standards, cylinders and exhaust pipe.

SCIENTIFIC AND TECHNICAL.

Among the boilers which deserve attention on account of their peculiar features in their design is

THE PIEDBOEUF BOILER,

which has been brought out in Germany and has been exhibited recently at the Duesseldorf Exhibition. It consists essentially of two cylinders, one above the other, in both of which there is a steam space, instead of in the upper one only. The lower cylinder is in this case an ordinary Cornish boiler, with internal furnace exactly as usual. At its back end it is freely connected, by a short pipe of large diameter, with an upper cylinder not quite so long as itself, through which pass, from end to end, a number of ordinary boiler tubes. Inside the Cornish boiler, just in front of the vertical connecting pipe, is fixed a diaphragm plate, extending downward from the top of the shell about 8 inches, and so coming within 4 inches of the furnace top The upper space in front of this diaphragm plate is connected with the steam space of the top cylinder by a pipe having in it a plain single-beat valve opening freely upward. As a matter of precaution this valve is connected with a float in the lower cylinder, which opens it as steam is formed and the water level lowered, but this is not an essential part of the system. By this arrangement, as can can readily be seen, it is possible to have steam in both in the lower and upper cylinders. As it is formed in the lower one it passes quietly off through the stand-pipes into the upper steam space, there being always a certain unbalanced head of water in the back part of the boiler (where the two cylinders are connected), to insure the right motion of the steam. The gases are carried upward from the back of the Cornish boiler and pass to the front through the tubes of the upper cylinder and then back again in the space surrounding the shells, so that there is apparently no danger of the shells being externally burnt. This arrangement also makes the danger of accident from low water a very small one, as the furnace itself cannot be uncovered unless the water level actually falls about 7 feet, the water entirely leaving the upper cylinder, which could hardly happen without notice. The boiler has a total heating surface of 1570 square feet, of which 1100 square feet is internal surface and 33.3 square feet of grate, the ratio of total surface to grate being therefore 47 to 1. It has been used for supplying steam for an engine under trail working at 100 effective horse power and was working, nominally, at six atmospheres.

M. Spring has continued his researches on

WELDING BY PRESSURE,

having submitted more than 80 solid pulverized bodies to pressures ranging as high as 150,000 pounds per square inch at various temperatures. The results, which have an important bearing upon geology and mineralogy, are of considerable interest. He has found that all crystalline bodies proved capable of welding, and in the case of bodies accidentally amorphous the compressed block showed crystalline fracture; crystallization had been brought about by pressure. Softness favors the approximation of the particles and their tendency to their placing themselves in the direction of the axes of crystallization. The amorphous bodies, properly so called, fall into two groups, one of substances like wax, which weld easily, and the other of substances like amorphous carbon, which do not weld. The general result is that the crystalline state favors the union of solid bodies, but the amorphous state does not always hinder it. Prismatic sulphur is changed by compression to octahedric sulphur; amorphous phosphorus seems to be changed to metallic, and other amorphous bodies change their state. In all cases the body is changed into a denser variety, whence may be inferred that the state taken by matter is in relation to the volume it is obliged to occupy under action of external forces.

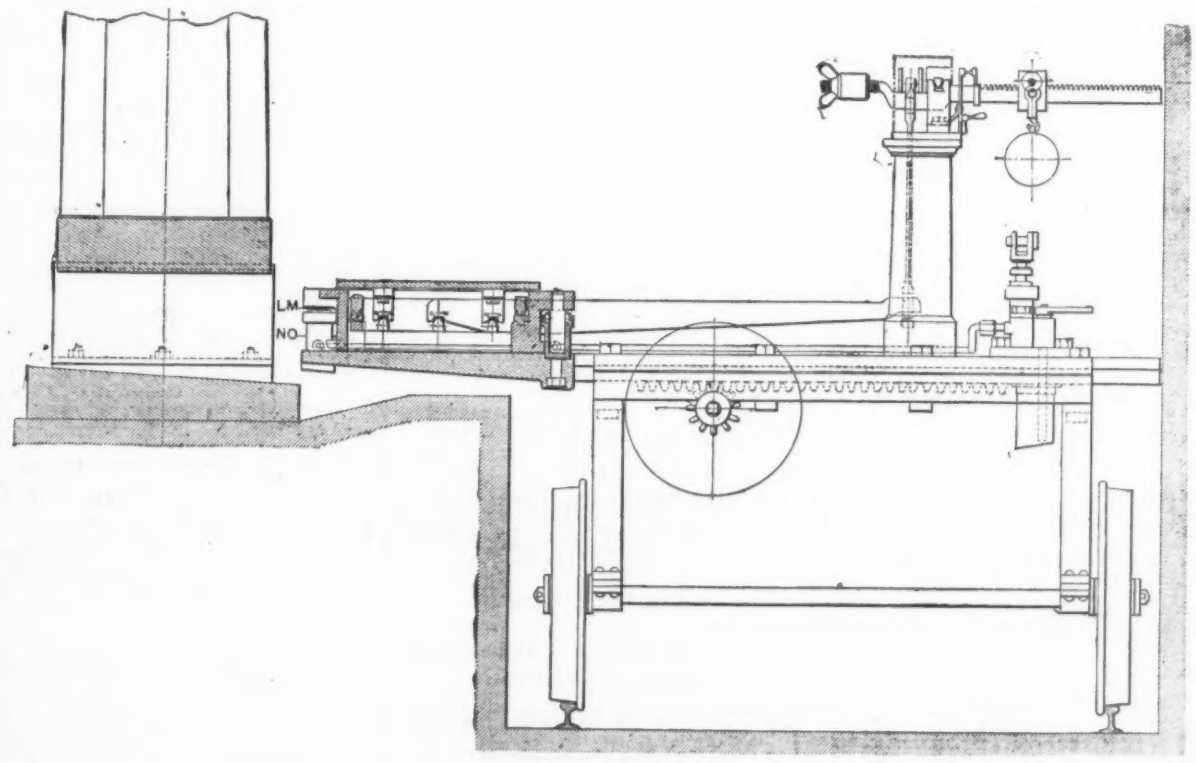


Fig. 1.—Vertical Section of Scale.

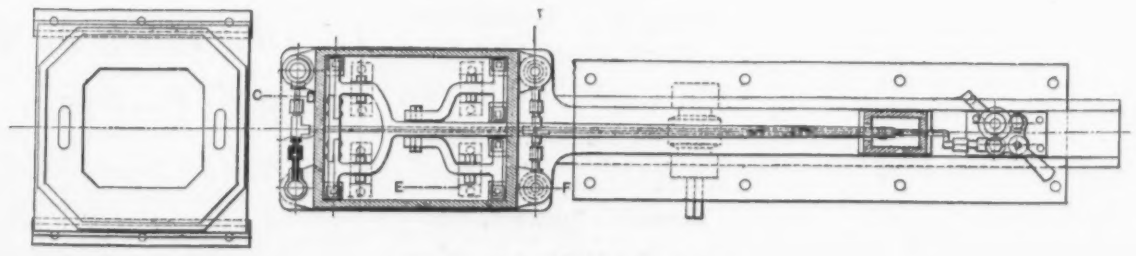


Fig. 2.—Horizontal Section of Scale.

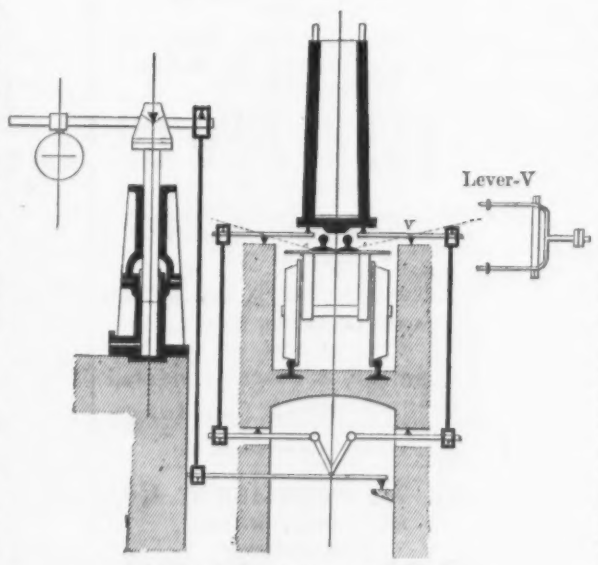


Fig. 3.—Counterbalanced Steel Ingot.

MORO'S APPARATUS FOR CASTING INGOTS TO A SPECIFIED WEIGHT.

A Novel California Propeller.

A steamboat to ply between the Eel River Valley and San Francisco has been completed recently in the latter city. Its construction is peculiar, and affords an example of the ready adaptability of American engineers to exceptional circumstances. In this case, the problem was to construct a propeller capable of crossing the bars at the mouth of Eel River. The vessel is 152 feet in length, 140 feet length of keel, 26 feet beam, 9 feet depth of hold, and will register 250 tons. When loaded with 300 tons of freight she will draw only 7 feet of water. She is flat-bottomed, but has a tapering bow and stern, and her lines are as beautiful and graceful as those of a yacht. The peculiarity of the boat consists in the arrangement of the two propellers. Instead of projecting from either quarter on either side of a single rudder, there will be two rudders, and each propeller will be arranged with respect to its corresponding rudder, just the same as it would be if there were a single propeller. There are in reality three keels, the center one curving up at the stern, following the line of the vessel. Those on either side, however, are 12 or 15 feet apart, and run straight out beneath the stern, where there are two stern posts and two rudders. The spaces between the keels and the hull proper are filled in solidly with knees, strongly bolted in every direction. There is left between the two keels a wide space, which will give free access to water, so that each propeller will act as well as if it were the only one used to draw the boat. The propellers are 6½ feet in diameter, of the Hirsch patent, and the pitch of the blades is set opposite, so that in going ahead both will turn to the center. They will be driven by twin compound engines, set 9½ feet between centers, with a surface condenser between. The condenser will contain 756 tin-plated brass tubes, ⅝ inch in diameter, secured in end plates with a wooden ferrule, and affording 618 feet of cooling surface. The condenser will be operated by a Blake compound air circulating pump, throwing 300 gallons per minute. The engines will have high and low pressure cylinders, the high pressure being 11 inches in diameter and low pressure 20 inches, with a 15-inch stroke. The steam will be supplied by a tubular boiler, with 3-inch return tubes. The engines will be so arranged that the engineer will face the bow, and will regulate his propellers by levers on either hand—pushing them forward when the bell signals "Go ahead," and bringing them back when he is signaled to back the vessel. The arrangement of the propellers is such that one may be backed while the other moves ahead, and the boat can thus be turned in her own length. This is of especial importance, on account of the narrow and crooked channel across the Eel River bar, where boats often ground because of their inability to turn quickly enough. The two keels under the stern will serve to protect the propellers if the boat grounds.

Japanese Leather Paper.

One of the most interesting and peculiar productions of paper is that which is made to imitate leather. The surface has every appearance of a finished skin, with extraordinary firmness and elasticity, and it can be subjected to washing without any injury from the water. These peculiarities are not so much due to the superior quality of the material, as to the mode of manufacture, the surfaces remaining intact, even when the paper is very thick, while with us paper of this kind soon loses its firmness, and the grain is impaired.

Japanese leather paper is made extensively at Flangawa, near Yeddo. It is made in sheets of 60 centimeters in length and 42 centimeters in width. The paper out of which it is prepared is not dissimilar to our packing paper, and is made in Southern Japan, near Nagasaki, and thence taken to other provinces, where it is manufactured into the different forms for various uses. The leather paper is made in the following manner: It is dampened and laid in pairs between two peculiarly prepared forms, made of paper also, only more highly varnished than ordinary leather paper; they have a very strong surface coating, but running only in one direction.

Before putting the paper in these forms, the sheets are stretched a little in the direction of their width. If there are several sheets, they are rolled on a cylindrical piece of wood, the grain of the paper running in an opposite direction from that of the wood. They are then unrolled from this on a cloth to keep them in shape, and put into a form with a hole in the top large enough to admit the end of the wooden cylinder. The roll of paper is then subjected to a pressure of 200 or 300 pounds. After the roll has been reduced to three-quarters of its original length by this pressure, it is taken out of the press and turned, the folds flattened out and again pressed to remove the deep marks.

After passing the paper through rollers several times, the upper surface acquires the appearance of leather. It is then colored, oiled with a kind of rape-seed oil, varnished, put once more in the press, which completes it, with the exception of drying. By means of parallel or cross lines on the rollers, the upper surface of the paper is made to resemble leather exactly in all its varieties. The paper being pressed to one-third, or even to one-half, its original thickness, and the passage through the rollers giving it a fine-grained appearance, makes it valuable to picture printers, as the surface has the appearance of crepe silk.

There is another variety of leather paper which is smooth and transparent, resembling hogskin very much. This is manufactured by a process of hammering, and is the highest priced, costing 27 cents per sheet, while the other ranges from 8 to 14 cents, some very fine selling at 8 cents per sheet.

In this country the manufacture of paper in imitation of leather is comparatively recent. Many of the large paper-hanging manufacturers make wall papers which are very perfect imitations of leather, both in appearance and durability. It is only used, however, for hanging. Leatherette is a very perfect imitation of leather, which, we believe, is made from paper. It is the invention of Mr. Pope, of Boston, the President of the Pope Manufacturing Company, bicycle makers. It has not only the appearance, but the feeling of leather, and is said to be extensively used for some purposes. For the binding of books it is very much superior—in feeling, at least—to the stamped muslin which is so largely used for this purpose. In appearance, the muslin is all that could be asked for, but it is so hard and stiff as to at once show that it is not what it appears to be.

The ship Eric the Red was wrecked off Cape Otway, Australia, recently. Unfortunately there were on board 150 packages of American exhibits for the Australian exhibition which opens at Melbourne next month. The following exhibitors lost their goods, which cannot be replaced, as it is too late: The Russell & Erwin Mfg. Co. of Connecticut and New York, general hardware and bronze articles; the Eagle Lock Company, of Connecticut, locks; Colt's Mfg. Co., of Connecticut, fire arms and a Baxter engine; Edward Miller & Co., of Connecticut, plated ware; Ives & Miller, of Connecticut, hardware; the United States Stamping Company, of Connecticut and New York, stamped metal articles; the Connecticut Board of Managers, of New Haven, a large show case built expressly for displaying the exhibits from Connecticut; F. S. Pease, of Buffalo, lubricating and illuminating oils; the estate of Samuel S. White, of Philadelphia, dental supplies; Stewart Hartshorn, of New York, window shade rollers; the Washburn & Moen Mfg. Co., of Massachusetts and New York, wire,

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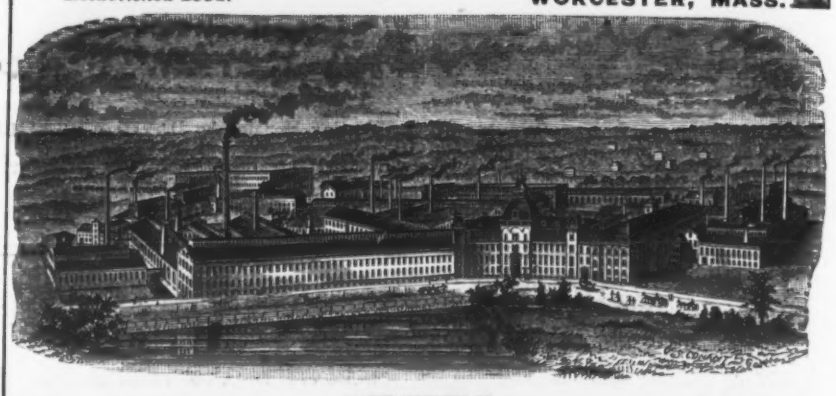


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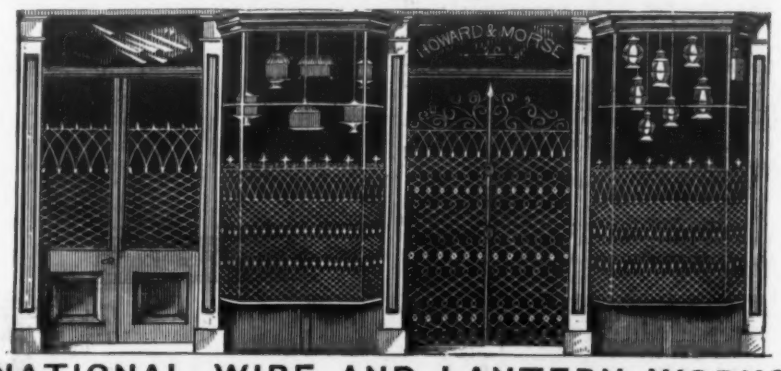
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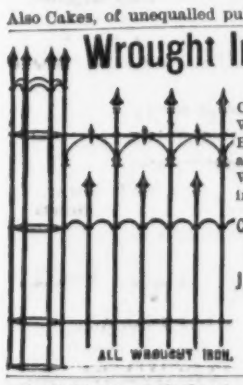
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What Is a Bushel of Charcoal?

We have often been asked by correspondents for a specific answer to the question "What is a bushel of charcoal?" and have as often replied that it depended very much upon how and where you measured it. Beyond the dimensions and solid contents of the standard bushel of the United States, we could give them little information on the subject of a bushel of charcoal. Only a little inquiry was necessary to find that in any attempt to gather materials for a specific answer to this question we meet confusions worse confounded. Mr. John Birkinbine, of Philadelphia, Pa., has recently been giving his attention to the great diversity of practice in the size of the bushels employed in measuring charcoal. The results of his investigations are given in the following article from the *Journal of the United States Association of Charcoal Iron Workers.* Mr. Birkinbine says:

"In making the comparison of the various charcoal furnaces, the writer has found difficulty in arriving at proper conclusions, owing to the variety of bushels in use. They have been found to be rated in capacity from 2150 to 2748 cubic inches, and in weight from 16 to 22.5 pounds. Two works in one neighborhood have been noted, where the standards were respectively the two extremes of weight mentioned, although the timber used was of the same varieties and proportions.

"It has, therefore, been necessary to reduce the fuel consumed per ton of iron to cords of wood, as a cord seems to represent a fixed quantity in all districts, except so far as the ingenuity displayed in piling by woodchoppers affects its interstical spaces.

"Further inquiry has developed still greater variation, and lately, for the use of the members of the association, an effort has been made to collect all statutes and legislative enactments in existence throughout the different States. To accomplish this purpose, letters were addressed to the various Secretaries of State, most of whom have cheerfully furnished the information desired.

"From these responses we learn that Maine, Vermont, New Jersey, Delaware, Maryland, Virginia, Alabama, Mississippi, Texas, Kentucky, Arkansas, Ohio, Indiana, Illinois, Michigan and Wisconsin have no legislative enactment regulating the sale of charcoal. Maine delegates this privilege to each town. Maryland has no statute but the Baltimore city code. Section 44, page 530, provides that 'the standard for a bushel of charcoal shall be 2747 70-100 cubic inches, full allowance for a cone or heaped measure.'

"Section 17, chapter 121, of general laws of New Hampshire, says: 'Every basket or other measure by which charcoal shall be measured or sold shall be not less, in its average diameter, than 20 inches, and of a depth sufficient to contain 18 gallons level measure, which shall be accounted two bushels, or one strike.'

"At 231 cubic inches per gallon, the standard bushel is 1989 cubic inches, without heaping.

"General statutes of Massachusetts, 1860, chapter 49, section 191, is as follows: 'In the sale of charcoal, the baskets, tubs or vessels used in measuring the same, except as hereinafter provided, shall be of a cylindrical form, and of the following dimensions in the inside thereof, to wit: 19 inches in diameter in every part, and 18 inches and one-tenth of an inch in depth, measured from the highest part of the bottom thereof; each of which shall be deemed to be of the capacity of two bushels, and shall be filled level full. * * *

"'Section 192. Charcoal may be measured in boxes, bins or cans, of the following capacities, to wit: of 5, 10, 20, 30, 40 or 50 bushels, such boxes, bins or cans being first lawfully sealed; and 5132 cubic inches shall be deemed equal to two bushels, or the level basket, tub or vessel described in the preceding section.'

"Section 193 fixes a penalty of $10 for having possession of any other measure than the above, and the destruction of the vessel and a forfeiture of not more than 50 cents for each bushel of charcoal measured in such irregular measure, except by special agreement between buyer and seller.

"Section 194 provides for the appointment of a suitable person to see to the enforcement of the above provisions.

"The standard bushel of Massachusetts is, therefore, 2566 cubic inches.

"General statutes of Rhode Island (revision of 1872), chapter 116, section 4: Every basket used in measuring charcoal brought into any town for sale shall be of the following dimensions, to wit: Nineteen inches in breadth in every part thereof, and 17½ inches deep, measuring from the highest part of the bottom of the basket perpendicularly to a level with the top of the basket. The contents of such a measure level full are 4961.6 cubic inches if made round, or 6317.5 cubic inches if made square.

"(By sections 5 and 6, charcoal can only be measured in baskets of the above size.)

"Title 16, chapter 15, section 8, general statutes of Connecticut: In the sale of charcoal and all other articles sold by heaped measure, 1282 cubic inches shall constitute a half bushel; 2564 cubic inches is, therefore, the standard.

"The New York statutes do not refer especially to charcoal, but it is probably covered by the law which reads:

"'The standard half bushel shall contain 1075.21 cubic inches.

"'The measure of capacity for coal, ashes, marl, &c., shall be the half bushel and its multiple and subdivisions, and the measures used to measure such commodities shall be made cylindrical, with plain and even bottoms, and shall be of the following diameters from outside to outside: The bushel, 19½ inches; half bushel, 15½ inches; peck, 12½ inches."

"That is, giving the outside diameter of the bushel measure and the cubic contents of the half bushel, one may figure out the inside diameter and inside hight of the bushel for himself. Presumably, it must contain 2150.42 cubic inches.

"A statute of Pennsylvania, dated January 22, 1847 (see pamphlet laws of that year, page 51), specifies that 'the standard measure of charcoal shall be 2571 cubic inches for each and every bushel thereof.'

"The revised statutes of Missouri, 1879, section 7667, provided under act of March 25, 1868, that 'the measure shall be for coke and charcoal 2680 cubic inches for every bushel.'

"In Montana there is no standard fixed by territorial statute for the bushel of charcoal. The United States government, a pretty large buyer, allows 2650 cubic inches for a bushel, and all their purchases are on that basis. The measurement allowed by all other buyers varies from 2500 to 2650 cubic inches, governed by the respective needs of buyer and seller. Probably 2550 cubic inches is the usual measurement obtained by the general purchaser.

"The revised statutes of Minnesota, 1866, chapter 21, section 6, state that 'every basket or other measure by which charcoal is sold shall not be less in its average diameter than 20 inches, and of sufficient depth to contain 4839 cubic inches, which shall be accounted two bushels.'

"The standard is, therefore, 2419½ cubic inches.

"In California charcoal is sold by the pound or by the net ton.

"Oregon has no standard. The Oswego Iron Company use the very liberal bushel of 2844 cubic inches.

"Now, how are we to compare the economies of our work as to fuel consumption when there is such a variation in our legislative enactments. We have data from iron works using bushels of from 2150 to 2844 cubic inches, and a plant employing 132⅓ of the smaller bushels to make a ton of pig iron would be doing as well as the Oswego Furnace, using 100 bushels of the larger measure. But in States where there is a statute fixed by law, there is generally a clause making it inoperative by contract, and it is an unusual thing to find an iron works employing the State standard. Thus, in Pennsylvania, where the statute provides for a bushel of 2571 cubic inches, we lately visited four charcoal iron works, which could all be seen in a continuous drive of an hour, and found that, although the ores used were the same, cold blast was blown at each furnace, that each had its own forge, that all coal was measured, not weighed, and that there was a uniformity unusual for neighboring plants. The bushels of charcoal employed were, respectively, 2150, 2250, 2675 and 2690 cubic inches."

In the next issue of the *Journal* Mr. Birkinbine took up the different weights given for a bushel of charcoal. Although the article was written especially for those interested in charcoal iron works, yet it will be found equally important to the tinman. The first portion of the second article is devoted to the quality and weight of the charcoal itself, and on account of its value we give it entire:

Although most of our charcoal iron works use the bushel of a specified number of cubic inches capacity, the variations in standard of which we have given, a fair proportion employ a standard of weight in fixing the bushel, and the transportation of charcoal by railroads, which is yearly growing in favor, has undoubtedly done much to increase the number of iron works who use the weight standard.

There is as much uncertainty about what a bushel of charcoal is in pounds, as in cubic inches; we have records extending all the way from 11 pounds to 22.4 pounds. Undoubtedly the established avoirdupois of a bushel of charcoal originally came from the actual weight of a specified quantity, but as different methods of charring and kinds of wood produce charcoal of varying specific gravities, the custom in certain localities was probably determined by these causes. The bushel by weight has been growing, for one manager could not afford to pay as much for 18 pounds of charcoal as his neighbor who received 20 pounds for his bushel; then 20 pounds was a convenient standard, for 100 bushels weighed a net ton; but as 2240 is also a ton by our peculiar laws, 22.4 pounds came to be used as a bushel, because 100 of these also weigh a ton. A fair average of the bushels by weight used throughout the country may be set down as 20 pounds.

Svedelius, in his hand book for charcoal burners, prepared for the Swedish government, says:

"Fresh charcoal, and also reheated charcoal, contain scarcely any water, but when cooled, they absorbs it very rapidly, so that after 24 hours, they may contain 4 to 8 per cent. of water. After the lapse of a few weeks, the moisture of charcoal may not increase perceptibly, and may be estimated at 10 to 15 per cent., or an average of 12 per cent.* That charcoal made from more solid kinds of wood absorbs less water, while porous, partially-dried charcoal, absorbs more, needs no explanation.

"Black, solid and perfectly good charcoal is indeed heavier than that which is loose and porous; but, on the other hand, it is lighter than that which has not been thoroughly charred. Regardless of the moisture and the manner of charring, the charcoal of some kinds of wood is, of itself, considerably heavier than that made of other kinds; charcoal made from foliferous trees is usually heavier and more solid than that made from coniferous trees. Young trees produce lighter charcoal than older ones.

"In determining the quality of charcoal, then, it is necessary both to see and weigh it, and it is perfectly natural that the figures given to represent the weight of charcoal differ very much. As a general rule, we may assume that a cubic foot of charcoal carefully made from well-seasoned pine weighs about 9 pounds, and a cubic foot made from spruce 8 pounds."

We have often been asked the question: "What is the proper weight for a bushel of charcoal?" We could make a partially satisfactory answer if we had a uniform bushel by measure to go by.

In "Percy's Metallurgy," there appears the following table, showing the weight of a cubic meter or stere of charcoal from different woods in the French Pyrenees. We have reduced the quantities to pounds per

* A thoroughly charred piece of charcoal ought, then, to contain about 84 parts carbon, 12 parts water, 2 parts ash and 1 part hydrogen.

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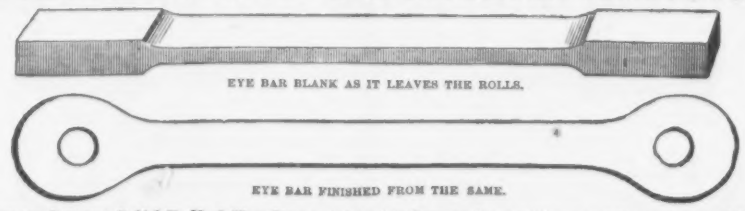
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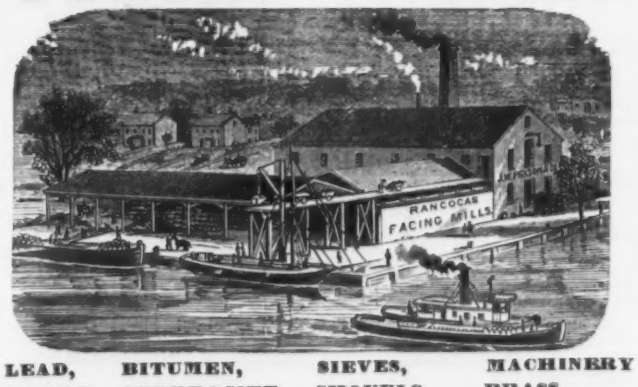
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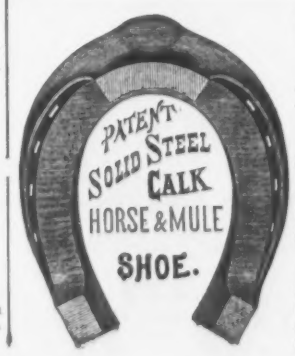
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cubic foot, and placed them in parallel column with Percy's data:

	Kilograms per cubic meter.	Pounds per cubic foot
Black oak, 25 years old	235	14.7
Beech, coppice wood, 19 years old	229	14.3
Beech, large	218	13.6
Chestnut, young	192	12.
Scotch fir, branches	173	10.8
Silver fir, large wood and branches	152	9.5
Alder	141	8.8

The same authority states that a cubic meter of charcoal made in circular piles in France from a mixture of hard and soft woods, weighed from 220 to 180 kilogrammes, or from 13.7 to 11.2 pounds per cubic foot.

To adopt a standard for calculation, we will take the United States bushel of 2150.42 cubic inches of distilled water and add cone 6 inches high=2748 cubic inches, or 1.59 cubic feet. Therefore, by multiplying the above weight by 1.59, we have the weight of a bushel of 2748 cubic inches, which varies from 14 pounds for the alder to 23.5 pounds for black oak. The average of pit coal made of mixed woods as above being 20 pounds.

In Prussian iron works a cubic foot of charcoal made from Scotch fir weighed from 10.3 to 10.6 pounds, and made from oak or beech from 13.2 to 14.1 pounds; these figures closely harmonize with those given in the table.

The following quotation is from Flower's "History of Tin and Tin Plates:"

"The usual Welsh mode of selling charcoal is by the dozen tubs, each measuring 36×36×20 inches, about 15 cubic feet, and weighing roughly about a ton. When charcoal is bought by measurement in the woods, the charcoal burner is privileged to measure one of his legs in the tub."

As a dozen of these tubs contain 180 cubic feet and weigh one ton, a bushel of 2748 cubic inches would weigh 20 pounds.

We have made some personal investigations which partially verify the foreign data given, but they are not extended enough to form any fair conclusions.

While operating the Fletcherville Furnace, in Essex County, New York, Mr. T. F. Witherbee coaled in a 60-cord kiln, various woods separately, and obtained the following weights per bushel of 2688 inches:

	Lbs.		Lbs.
Birch	17.025	Hemlock	12.85
Black ash	14.475	Basswood	10.625
Poplar	12.275	Whitepine	9.8
White ash	16.325	Spruce	11.25
Maple	18.95	Yellow birch	18.75

As this coal was weighed while the kilns were being emptied, and before there was an opportunity to absorb moisture, an allowance of 12 per cent. should be made. This would make the average bushel of 2748 cubic inches weigh about 17 pounds, considerably less than that noted above.

The equalization of weight and measure is important to all in the charcoal iron trade, and if the facts are given, we shall be glad to work out and publish such a tabulated statement as will permit each to intelligently compare his working with that of other similar industries. We shall, therefore, be thankful if our readers will each, as far as he has facilities, obtain accurate weights of given volumes of various characters of charcoal and forward to the secretary. All that is required is to give the exact dimensions of the barrow, wagon or other receptacle, its correct gross weight "even full" of charcoal, and the actual weight of the receptacle, together with a memorandum of the proportions of different kinds of wood from which the coal is made, and, if possible, the age of the wood, and whether the coal is fresh or from stock.

Such a table is needed, and we would urge co-operation upon all our friends.

Having now considered a bushel by measure and a bushel by weight, we have to examine into the relative advantages of each.

In purchasing coal or paying colliers for their work, the benefits of using a measure of capacity are:

1. Brands and dirt, particularly from pit coal, which weigh more than charcoal for same bulk (some of which will be received in spite of rigid supervision), are only paid for at same rate as charcoal, while if measured by weight an additional price is paid for this less valuable material.

2. No water is paid for. Berzelius states that he found the ordinary run of charcoal 24 hours old to contain from 10 to 12 per cent. of water absorbed from the atmosphere. Percy gives three analyses by Faisst, showing, respectively, 6.04, 7.23, 8.21 per cent. of moisture in fresh charcoal.

The natural absorption of moisture is often supplemented by water thrown on the charcoal by teamsters to extinguish fires, or to add to its weight, or in quenching kilns.

3. Transportation reduces the volume more rapidly than the weight of charcoal, and, therefore, a wagon which, at the coaling, was loaded with a given number of bushels upon a standard of equalized volume and weight, would contain a less number of bushels on arrival at destination, if measured, than if weighed.

4. The mud on wagons, snow on car-roofs, or other outside weight, need not be considered, and the system of dockage necessitated by these matters is not required.

On the other hand, the advantages of using a standard of weight are—

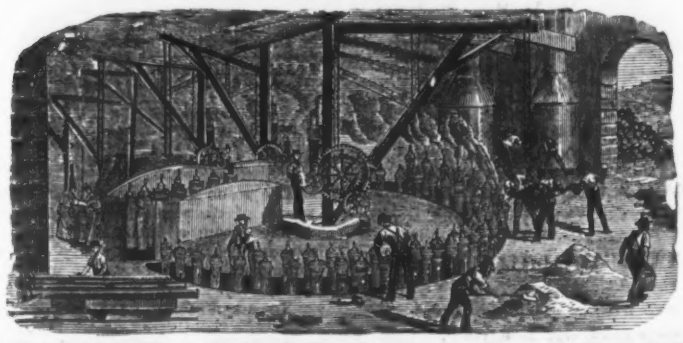
1. Soft and bulky coal, being light, is not paid for at the same rate as hard and compact coals, but in purchasing or contracting by a weighted bushel the ironmaster pays practically by the pound of carbon, and a hard, dense fuel, especially advantageous for blast furnace use, is more likely to be obtained.

2. In charging fuel to forge fires or blast furnaces a regularity can be secured with weighted coal generally impracticable with measured coal; therefore the consumption of fuel per ton of metal can be kept at a lower amount, and the operation of the works maintained more reliably and satisfactorily.

3. If kilns convenient to the furn[illegible] employed, there being no dirt or [illegible] weights to allow for, the coal, if weighed, secures the fairest method of making a standard, both for settlement and for charging, for the denser the coal, if well made,

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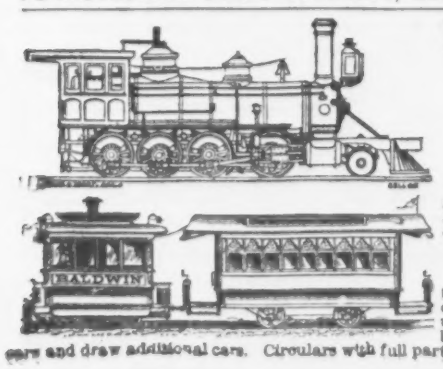
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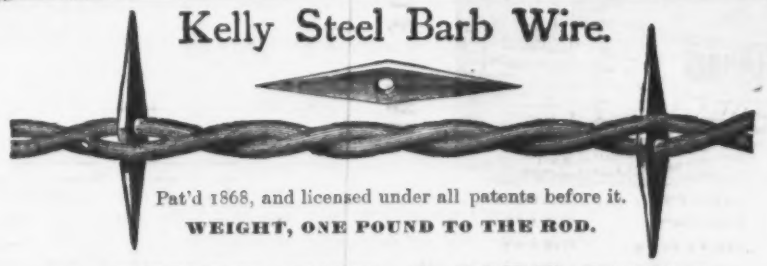
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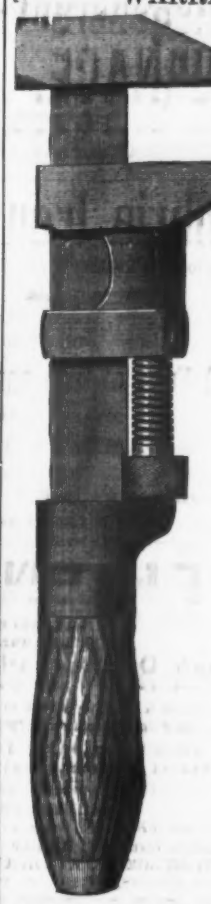
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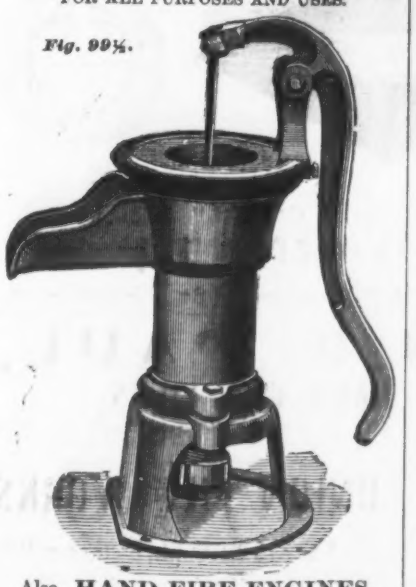


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Fig. 99½.



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Fig. 285.



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the more weight has been handled in filling the kiln.

We consider that the most satisfactory method is to deliver the charcoal on the furnace bank or into stock houses by measure, and to charge it into furnace or forge fire by weight. This obviates paying for dirt, dust, brands, water, &c., and also does away largely with dockage. The coal on bank or in stock having about a uniform amount of moisture absorbed, the charges contain carbon proportionate to their weight, and therefore a more intelligent management of the plant is possible than where the quantity of carbon is a matter of supposition only, based on a general average.

The occasional comparison of a few loads will give data for establishing equalized measures by weight and volume, the former having margin sufficient to cover loss in handling.

We incline to the opinion that the weighed bushel will continue to grow in favor, for, as the use of kilns and retorts becomes more general, the advantages of employing the measured bushel are less apparent. The abandonment of meiler charring, which to a great extent is inevitable as our wooded areas decrease and the necessity of economizing is forced upon us, will place the coaling under closer supervision of the manager, and the product, being free from dirt and charged fresh, will be most satisfactorily used by the weight standard.

Manufacture of Tin Plate.

The following is from the work of Mr. P. W. Flower, which has already been noticed in these columns:

Tin plate, or, in other words, tinned plate, or, as the French people call it, "white iron," is a material which, in a converted shape, is familiar to everybody under the name of tin; but outside of those who are unfortunate enough to be engaged in the manufacture, or are fortunate enough to deal in or convert this useful metal, few, indeed, of the world are aware that their so-called "block-tin" teapot, kettle or dish-cover is made of nine parts of iron and one part tin. Tin plates vary in size, in substance, in toughness and in the nature of their coating. In sizes they vary from a sheet of 10 by 14 inches, suitable for a 1-lb. tin of provisions, to a sheet of 40 by 28, adapted for roofing purposes in the Western States of America; in substance they differ from a sheet of taggers, as thin as paper itself, to a plate of ten times that thickness, adapted for the dish-covers of ordinary use; in toughness, from a sheet which won't bend at all to a sheet of charcoal iron, which is equal in tenacity to leather itself. The coating varies with the purposes for which the tin plates are required—the lightest coating is sufficient for mustard and biscuit purposes; the heaviest possible coating is desired for dish-covers, which have to stand planishing in conversion, and will be subsequently subject to the inevitable ceaseless "rubbing" in every careful household. The tin plates of commerce are packed in boxes, and, as a rule, are bought and sold under the general terms of coke or charcoal, this distinction relating, of course, to the nature of the iron from which the plates were made; and these qualities are again divided into best and second quality charcoal, and best and second coke, and even these descriptions are subdivided by clever dealers into different grades of best or worst. It is needless to say that the value of tin plates varies with the quality; a box containing 112 sheets, 20 x 14 inches, 112 pounds, made out of the very best charcoal iron, handsomely coated and well assorted, will fetch a price of 25/ per box, while poorly coated, unassorted second coke plates will not sell for more than 20/, although the size, substance and weight of the sheets are identically the same. In describing the manufacture, it should at first be understood that subsequently to the manufacture of bar iron in the forge, the processes of rolling, shearing, pickling, annealing, coating and sorting are common alike and necessary for every class of plate, but are performed more or less carefully at different works, and more or less carefully according to the class of work which is in course of manufacture.

It is to the forge that we must look for the good or bad nature of the iron which is the foundation of the brand. Iron well made in the forge cannot be materially affected, either for better or worse, by any subsequent process of manufacture; and on the other hand, iron poorly made cannot, by all the care in the world, be improved upon after it has taken the shape of bar iron. The nature and process of puddling is so well understood that it will be sufficient, so far as the forge goes, to confine our description chiefly to the manufacture of charcoal bar iron, the variations in the quality of such iron being more in detail than in principle. Variation may arise from the quality and quantity of the fuel and pig iron employed, and the presence or absence of judgment and care in the regulations for use, and in the subsequent manipulation of such materials. To commence with the manufacture of best charcoal iron, it may be as well to describe the forge, which consists, for the most part, of a long, low, open shed or building coustructed of stone, roofed with pantiles, floored with iron, the roof supported upon iron pillars or arches, so arranged as to admit plenty of air; and in connection with the forge are the engine house, boilers and blast house, or blowing cylinders, as the case may be. The blast or air is made to pass round the forge in cast-iron underground pipes, and is tapped off at each fire as required for use, just as water might be; the engines are so arranged as to drive the helve-hammers, rolls and shears, which, in addition to the blast, is all the machinery that is required for the manufacture of bar iron. Water-power was formerly employed, and is well adapted for the manufacture of iron; but the number of such sites being limited by nature, and the demand for iron being forever on the increase, steam was first employed for the assistance of the water-wheels, and, finally, forges were constructed which went entirely by steam. Economy is claimed by old-fashioned people as the great merit of water-power, and it may be so for grist and flannel mills, where time is no object; but it seems to be doubtful, where coals are cheap, whether the larger output of iron which can be produced by steam is not sufficient to compensate for the fuel employed, to say nothing of breakage or of the waste which results from irregular work.

All forge work is paid for by weight; the materials are weighed in and the result is weighed out at the beginning and end of each turn. As a rule, a finer or hammerman can earn 10/ in a day of ten hours, during which he only attends to his fire and to the manipulation under the hammer, all fetching and carrying being done for him by laborers or coachers.

At some one or two of the existing tin-plate works, the manufacture of pig iron from the ore is also carried on, but having regard to quality this is not desirable, for it is found better to manufacture tin-plate bars from a mixture rather than entirely from one brand of pig iron. One description helps the other, giving it qualities which it did not possess, and improving the "yield," *i. e.*, the quantity produced. The quality of pig iron best adapted for charcoal plates is known as gray forge, and is brought to Wales for the purpose of this trade very largely by sea from Lancashire and Cumberland, native iron by rail from the Forest of Dean and other local sources.

The dandy or running-out fire is employed for the simple purpose of melting pig iron by the use of coke and blast. The smoke stack for these fires is built upon an open framework of iron, so that the melter has access to his fire on all sides at once. The level of these fires (which are 4 feet square) is made about 18 inches above the level of the forge, so that the iron when tapped may run of its own accord into the refineries which are below it. The duties of a melter are to carefully maintain his heat, to load and tap at the right moment, and when tapping, cleverly to separate the cinder from the iron.

The stack of the charcoal refinery is also constructed on an iron framework, but three sides out of four are closed in by cast-iron plates. There is a small opening in the back, through which the hot iron, when tapped from the dandy, passes into a nest of hot charcoal, and the finerman, who is standing in front of his fire, smothers up the iron in charcoal, turns on the blast and from time to time works up the mass with a long bar; in about an hour he has worked it up into a ball, which is conveyed on a coach to the helve, and, after being well hammered to expel the cinder, is either rolled or cut into the shape which it will retain as charcoal stamp iron, and is then thrown into cold water till it is cool enough for handling. In the best works these stamps (so called) are hammered and trimmed with a chisel before they are passed on, but, so far as manufacture is concerned, rolling is the end of the first process, and they are ready for conversion.

Charcoal was at one time the refuse of a manufacture which was carried on for the production of naphtha and sugar of lead; now the value of charcoal has been cleverly forced to such a point that it is said the chemicals are the refuse of the charcoal, which ranges in value from 30/ to 60/ per ton, and has been recently selling for a much higher price. It might be supposed that after all these years of iron manufacture there would have been great difficulty in obtaining fuel for the purpose; but this, in fact, is not the case, for there is always plenty of charcoal "offering," and it is not unusual for quantities of 1000 tons to be bought and sold in one bargain. Formerly all the charcoal was burned in the woods, and was carried in sacks by mules to its destination. This was all very well so long as there was plenty of wood to be found in the immediate neighborhood; now the bulk of the charcoal is made at the charcoal works from wood which is brought from long distances by sea and rail. The usual Welsh mode of selling charcoal is by the dozen tubs, each measuring 36 by 36 by 20 inches, about 15 cubic feet, and weighing, roughly, about a ton. When charcoal is bought by measurement in the woods, the charcoal burner is privileged to measure one of his legs in the tub. Irrespective of the subtle qualities which are given to the iron, there is no fuel so safe and reliable in its nature as charcoal, for it is impossible to have any variation in the "quality" of wood.

The use of a hollow fire is peculiar to the manufacture of tin plates, and it is employed for the purpose of creating and maintaining an intense welding heat, in which the stamp iron is placed to "soak" before it is taken to the hammer, where it is welded into blooms. The furnace is, of course, constructed of fire-brick; it is almost square in shape, about 6 feet by 6 feet; it is flat-topped, without a smoke-stack, and stands about 3 feet above the level of the forge. These furnaces are built with doors on each side for the use of the hammermen, who work face to face. One end is fitted with blast boxes, to blow up the heat, and at the other end is an opening into which the coke is thrown. Thus an immense mass of heat is created at the bottom of the furnace, which is called hollow from the fact that the iron is suspended in the heat, and is not in actual contact with the fuel in the furnace. The stamp iron is piled up in quantities of about 112 pounds, and placed upon a bar of iron forged for the purpose, small at one end, easy to handle, and flat and broad enough at the other to support the stamps when placed upon it; it is about 6 feet in length, and is called a "staff." The pile is first put into the "stove" to warm; it is then put into the fire to heat, where it is supported by means of a hook which fastens the staff to the fore plate; in about 20 minutes it is ready to go to the hammers, where the stamps are welded into one homogeneous mass called a "bloom," which is almost cut into two by a cutter, then doubled up and returned to the hollow fire. After a further heating of ten minutes it is again taken to the hammer and again returned to the furnace, where, after a final wash heat, the "bloom" is conveyed to the rolls and rolled off into bar iron.

It is unnecessary to waste time over this manufacture, which is so well understood; suffice it to say that the better the small coal the better the coke will be, and the better the iron. The old-fashioned open-mouthed ovens are now out of date, and it is found more economical to manufacture in closed ovens, working with flues to a smoke stack,

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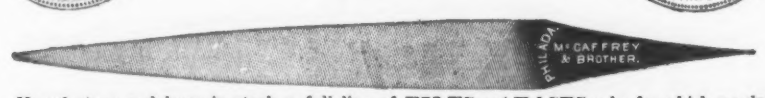
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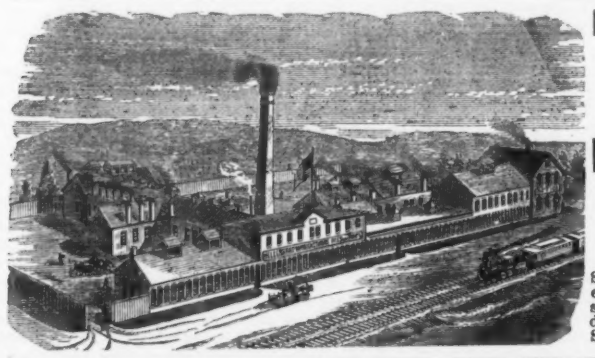
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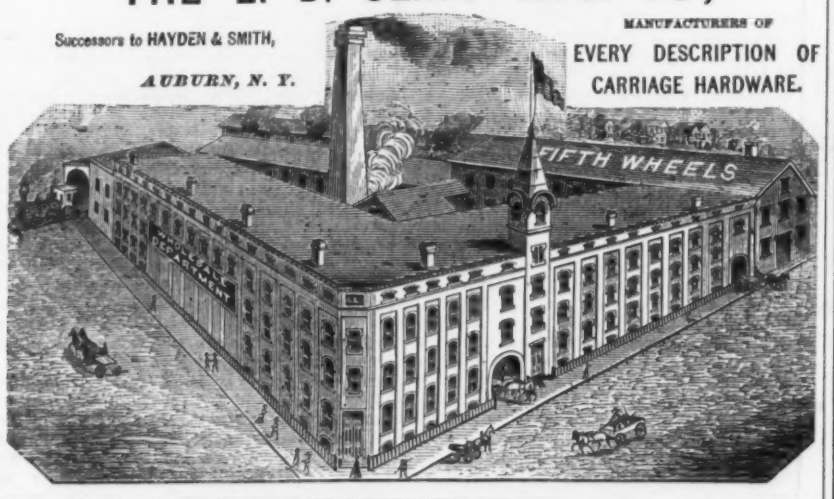
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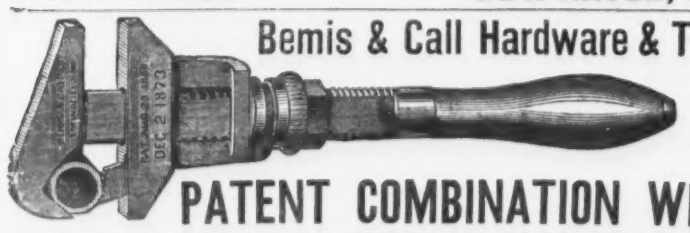


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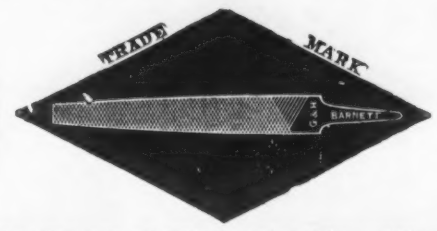
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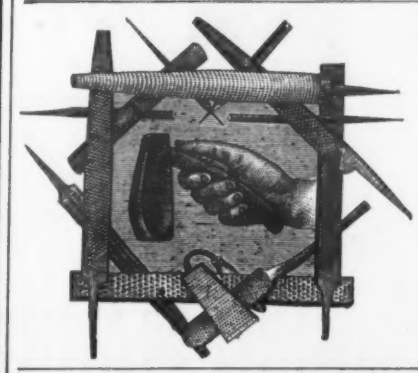
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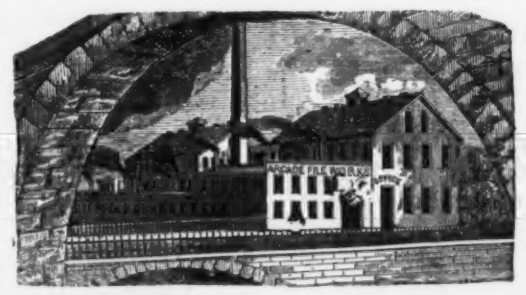
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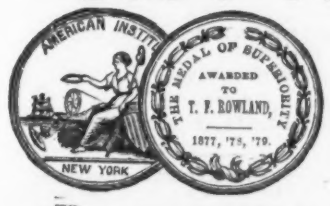
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where may be found a full assortment of Tacks, Brads, Wire Nails, &c., for the accommodation of the New York Wholesale and Jobbing Trade.

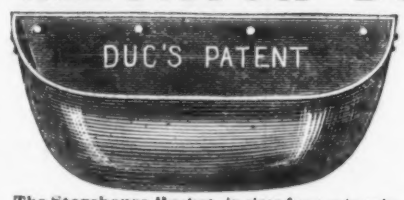
☞ Any variations from the regular size or shape of the above-named goods made from sample to order. ☜

A SILVER MEDAL has been awarded above goods at the Paris Exposition, being the only medal awarded any American manufacturer of Tacks and Wire Nails.

DUC'S PREMIUM ELEVATOR BUCKET.



ALWAYS FIRST COMPETITIVE



PREMIUM IN TESTS.

The Storehouse Bucket, in sizes from 12 to 17 in.

This Bucket is struck out from the best charcoal iron; consequently is very durable. It requires 50 per cent. less power to run it than the old-fashioned square bucket, and will outwear **half a dozen** of them. Over 300,000 are now in use by the principal Millers, Brewers, Maltsters and Manufacturers at home and abroad. It is the best Bucket made.

CAUTION.—The popularity of the *DUC BUCKET* has caused many manufacturers of the old style of Elevator Bucket to closely imitate its spherical shape. We warn all parties against patronizing infringers of our patents, as they will be held accountable. Send for circular. Address



The Mill Bucket, in sizes from 3½ to 16 inches.

T. F. ROWLAND, Sole Manufacturer, Continental Works, BROOKLYN, N. Y.

AMERICAN BOLT CO., Lowell, Mass.,

MANUFACTURERS OF

Bolts, Nuts, Washers, Chain Links, Car Bolts, Bridge Bolts, Lag Screws, &c.

The Oldest Shot Tower in America.

FOUNDED JULY 4, 1808.



THOMAS W. SPARKS,

Manufacturer of

SPARKS'

American Chilled Shot,

Rivaling the English and all Others.

STANDARD DROP & BUCK SHOT AND BAR LEAD.

121 Walnut Street, Philadelphia.

THE ANSONIA CORRUGATED STOVE PLATFORM,

With Patented O. C. Border.



Cut Showing Round Platform.

ROUND ZINC.

27, 30, 32, 34, 36 inch.

Manufactured of heavy metal, requiring no nailing or lining, the edge retaining its form. Superior pattern, finish and quality. Price as low as any.

Send for List and Discount.

Packed 12 in each case.

THE ANSONIA STOVE REST.



This Cut is the Actual Size of 2-inch.

STOVE RESTS are designed to place under the feet of Stoves and Ranges, for the purpose of raising them from the floor or platform. They are about ¾-inch thick, covered with sheet metal in zinc, brass and nickel plate. Highly polished and finished. Packed one set of 4 pieces in each paper box, and 36 sets in each case. Sizes (inside of circle on top)

2, 2½, 2¾, 3⅛ inch.

Send for full Description and Prices.

ANSONIA BRASS AND COPPER CO., 19 Cliff St., New York.

PATENT CONCAVE OX SHOES.

The only forged Ox Shoe made with concavity to fit hoof, and the best and cheapest. Also, **Flat** Shoes with **two** calks at same price.

Greenfield Tool Co.,

Greenfield, Mass.

RICHARD DUDGEON,

No. 24 Columbia Street, New York,

Maker and Patentee of the Improved

Hydraulic Jacks

AND

Punches.





Roller Tube Expanders and Direct Acting Steam Hammers.

Communications by letter will receive prompt attention.

Jacks for pressing on Car Wheels or Crank Pins made to order.

E. PHILLIPS & SONS, Manufacturers, SOUTH HANOVER, MASS.



F. R. EMMONS, Agent, **55 Warren St.,** NEW YORK.

TACKS.

EVERY

PUTNAM NAIL



is drawn down to a point from the rod, thus:

It is the only Hot Forged and Hammer Pointed Horse Shoe Nail, made by machinery, in the World.

Some other manufacturers claim to make a hot forged Nail, but you will observe on all such a sheared edge near the point.

THE PUTNAM NAIL CO., Boston.

P. O. Address, Neponset, Mass., U. S. A.

from which a charge of 26 to 27 cwt. of small clean binding coal should produce a ton of 24-hour coke; if the coke is wanted harder it must be left in longer, but the yield is the same.

The helve is the oldest and, at the same time, the best-known means of forging out iron; it is suitable equally for steam or water-power. It consists of a heavy piece of cast iron, which is lifted by a cam, and falls by its own weight upon the iron which it is required to forge. There is no coaxing or nursing with this kind of hammer; it must be good iron or it will splash all to pieces, and it is sure to be well hammered, for the blow regulates itself. In former times the head of the helve was raised by the pressure of a cam coming downward upon the tail; now it is always usual to raise the head by the upward movement of the cam, but it does not matter very much how this operation is performed, so long as the hammer does fall; the result upon the iron is the same.

The bar iron is taken from the forge to the mills in the lengths to which it has been rolled; it is there cut by means of shears into such "pieces" as are suitable for the plates which are required. A mill consists of two large open-mouthed reverberatory furnaces, two pairs of rolls or rollers—one for roughing-down and singling the pieces, the other for finishing-off the sheets—a doubling shears for trimming off the ends when in course of manufacture and a shearer's shears for cutting down the finished work into the sizes which are required. The workmen consist of a roller-man, doubler, furnace-man and behinder, and their names pretty well describe the nature of their occupations; the roller-man is head man and in charge of all the rest. It is the duty of the doubler to heat the pieces of thick iron, which he hands to the roller-man, who passes them between the rolls, when they are caught or received on the other side by the behinder, who returns them over the rolls to the roller-man, who repeats the operation until the iron is sufficiently extended, when he hands back the piece to the doubler, who places it again in the furnace for re-heating. This first operation is called "breaking down." When the returned piece has been sufficiently heated, it is taken out by the furnace-man and again handed to the roller, who again extends it by passing it several times through the rolls, and he then hands it to the doubler, who doubles it from end to end—first by means of his foot, then by the pressure of the squeezer; he then sends it back to the furnace for re-heating. This is called "singling," or "first doubling." After reheating, the furnace-man again hands the piece to the roller-man, who further extends it and delivers it to the doubler, who, by means of a shears, cuts off the uneven swallow-tail ends, and returns the iron to the furnace; this process is called "second doubling." Finally, the iron, after reheating, is passed backward and forward through the rolls until, by extending the piece to a certain length, it is known that the sheets have been reduced to the substance which is required; this is called "finishing," and the production is called black plate. The black plate is placed by the behinder upon a framework of iron to cool, from which place it is taken (later on) by the shearer, who cuts it down to the length and width of the order for which it has been rolled. The mills work continually by day and night, from six to six, changing turns as in the forge. Each mill can produce from 70 to 80 boxes in 24 hours—about four tons daily. The mill men earn good wages, but they are not such a steady set of men as in the forge, where they have settled down to a fixed occupation for life; in the mills they are possibly a little unsettled by constant promotion, as each boy or man is "passing on" as the opportunity offers, from behinder to furnacer, from furnacer to doubler and from doubler to roller man. It will be understood that after leaving the mill nothing can alter the size or substance of the sheets; all subsequent operations are made with a view to the "finish" of the plates.

INDUSTRIAL ITEMS.

CONNECTICUT.

Dr. J. H. McLean, of St. Louis, who is experimenting in New Haven with breech-loading magazine cannon, has just completed another battery gun, which was tested for the first time recently. No discharges were made, but the firing apparatus was worked with perfect ease, and Dr. McLean makes the claim, based on experiments, that this new gun, which cost $15,000, will fire 12,828 shots per minute. The shots are fired from magazines, and this prevents the gun from overheating, and prevents danger of explosion. The gun has been named the "Lady McLean." The inventor will shortly give a public exhibition of his heavy ordnance, when government experts in ordnance will be invited to be present.

MASSACHUSETTS.

Ira G. Todd, an ingenious machinist at the Florence sewing-machine shops, has invented a new mechanical motion which will be of use for sewing-machine work, silk and other light machinery. The motion is a positive one, and is to drive the shafts at right angles with each other, any distance apart, without using bevel gears. The motion consists of a peculiar double eccentric and ordinary pitman connecting on the stud of the crank arm of the lower shaft. This motion has long been sought for in mechanics, so that the noise of the bevel gears could be dispensed with.

Owing to increasing demands, the Springfield Sewing Machine Company, which now produce about 50 machines daily, are considering the project of enlarging their quarters. Estimates have already been made for duplicating the Taylor street factory, and it is thought that within two years they will have as large an establishment as that of the Home Sewing Machine Company, at Orange, which employ several hundred people. They will also build a foundry, unless they can contract with some concern in the city to do all their foundry work, which they are now compelled to divide into two or three lots, some of it being sent to Chicopee.

At Wareham the iron works are again busy.

NEW YORK.

The Greenwich Iron Foundry, at Nos. 145 to 155 Perry street, was recently sold out by the sheriff. The foundry was established 60 years ago by the Messrs. Richards, and in 1873 Lewis Fink, Sr., put his son in the business in partnership with M. Walther, the firm being Walther & Fink. The business was not prosperous, and Mr. Fink, Sr., who was estimated to be worth $150,000 at the time, took the foundry off the firm's hands and undertook to run it himself. He did not succeed, and was compelled to sacrifice much of his real estate. Foreclosure proceedings have now been brought against the foundry property, on which the mortgages aggregate $21,000.

NEW JERSEY.

A Newark edge-tool manufacturer has shipped 1000 dozen axes and hatchets to Australia.

MARYLAND.

Fire was lighted in the furnace of the Warren Glass Company, at Cumberland, on the 6th inst. The company will manufacture blown glassware, and will employ about 20 men.

PENNSYLVANIA.

The following firms were awarded premiums at the Pennsylvania State Fair, held recently at Philadelphia: C. B. Rogers, Philadelphia.—Special mention for display of plows and cultivators. Ward Plow Co., Batavia, N. Y.—Bronze medal for subsoil plow, and bronze medal for 2 horse plow. Syracuse Chilled Plow Co., Syracuse, N. Y.—Silver medal for chilled plows, and bronze medal for side-hill plow. A. B. Farquhar, York, Pa.—Bronze medal for side-hill plow. Reiner & Bros.—Diploma for 2-horse scratch harrow and sled, and special notice for harrows packed for shipping and collection of harrow teeth. W. H. Jones.—Diploma for iron roller. St. Joseph's Mfg. Co.—Silver medal for one iron sulky plow. P. P. Mast & Co., Philadelphia.—Diploma for one walking and one sulky cultivator, and bronze medal for sulky cultivator. G. B. Olin, Perry, N. Y.—Diploma for spring tooth harrow. South Bend Plow Co., Indiana.—Bronze medal for 1-horse plow. D. E. McSherry & Co., Dayton, Ohio.—Bronze medal for grain drill. S. N. Gallup, Macedon, N. Y.—Silver medal for grain drill force feed, and bronze medal for fertilizer spreader. Benson, Maul & Co., Philadelphia.—Diploma for Philadelphia broadcast hand seed sower, and bronze medal for horse seed sower. Harrisburg Car Mfg. Co., Harrisburg, Pa.—Corn planters, diploma. Asay & Wood, Philadelphia.—Check-row corn planter, with fertilizer attachment, bronze medal. S. L. Allen & Co., Philadelphia.—Bronze medal for seed drill. Hercules Lever Jack Co., Irvington, N. J.—Silver medal for jack for raising heavy weights. Joseph R. Hagel, Camptown, Pa.—Bronze medal for jack for raising heavy weights. A. Box, Philadelphia.—Silver medal for patent steam or hand elevator. Philadelphia Patent Rope Hoisting Machine Co.—Bronze medal for rope hoisting machines. E. Harrington & Son, Philadelphia.—Silver medal for double chain screw pulley block, and bronze medal for double chain quick-lift pulley blocks. Day Bros., Philadelphia.—Bronze medal for portable blacksmith forge, and diploma for collection of forge tools. J. E. Mitchell, Philadelphia.—Diploma for collection of grindstones. E. W. Siegman, Philadelphia.—Bronze medal for mower and reaper, knife grinders. Thomas Marshall, Philadelphia.—Bronze medal for combination bench vise. Day Bros., Philadelphia.—Bronze medal for collection of hand drills for metal.

The steamer La Senteniel, built by Messrs. Neafie & Levy and Messrs. Hillman & Co., of Philadelphia, for the government of Hayti, made her trial trip recently, starting from the works of the builders at Kensington and steaming as far as Wilmington and return. She accomplished 16 knots per hour against a strong tide under 60 pounds of steam and making 125 revolutions per minute. La Senteniel is designed as a dispatch boat and revenue cutter for the island of Hayti. Her length is 215 feet; beam, 32 feet; depth, 15 feet. She has been built with special regard to speed, and carries two steel Parrott rifled guns. She was finished and ready for sea in 60 days from the day her hull was laid.

The Penn Treaty Sheet Iron Works, Philadelphia, owned by Marshall Brothers & Co., were burned on the 4th inst. They were fully insured.

In the fall of 1855 ground was broken for the Wampum Furnace, Lawrence County. It was run under the management of several different parties until 1865, when it was blown out and lay idle for several years. The property was then purchased by the Eagle Furnace Company and run until it was again blown out in June, 1877, and was not blown in again until a few weeks ago. The first machinery for the furnace was put in by Asa Ackles, of Sharon, and Allen McLain, of Pittsburgh. They remained and ran the machinery for several months afterward. When the furnace was first blown in everything had to be shipped by canal.

The Union Glass Works, at Newcastle, are on full time, doing good work.

The steel works of the Lackawanna Iron and Coal Company, at Scranton, made last week 2720 tons of ingots, exceeding any previous week's work there by over 160 tons. The above product is believed to be the largest week's work ever yet made anywhere in the world by two converters.

A large lot of tumblers shipped by the Rochester Tumbler Company for the city of Mexico went down on the steamer Vera Cruz. They were fully insured, and instructions have been received to duplicate the orders at once.

The Beaver Falls Hinge Company have added a large new engine and two new boilers to their works.

The court at Pottsville directed the receivers of the Dauphin Furnace Company to blow the furnace out as soon as possible, on the ground that it does not pay.

Pine Iron Works, in Douglass Township, were only running one turn last week, in consequence of scarcity of water.

During the week ending on the 5th inst. there were 2117½ tons of iron made at the

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of

PEN AND POCKET CUTLERY,

Solid Steel Scissors, Shears, Razors, &c.

Sole proprietors of the renowned full concave

"ELECTRIC RAZORS,"

And the celebrated **"ELECTRIC SHEARS."** Nickel Plated Bows.

Agents for the BENGAL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

MERIDEN CUTLERY COMPANY.



The oldest manufacturers of Table Cutlery in America. Exclusive makers of the CELLULOID HANDLE for Table Cutlery. A most beautiful and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application. SALESROOM, No. 49 Chambers St., N. Y. Address all communications ro West Meriden, Conn.

THE LAMSON & GOODNOW MFG. CO.

88 CHAMBERS ST. N.Y.



AMERICAN TABLE CUTLERY &c.

AARON BURKINSHAW, Pepperell, Mass.,

Manufacturer of

PRUNING, BUDDING AND POCKET KNIVES

OF EVERY DESCRIPTION.

My Blades are forged by hand from the best cast steel and warranted. Established 1853.

THE VICTOR LAMP TRIMMERS



The Celebrated VICTOR Cast Shear



HENRY SEYMOUR CUTLERY CO.

Manufacturers of Full Nickel Plated and Maroon Japan Handle

SHEARS AND SCISSORS.



Every pair warranted. Sold by Hardware Dealers throughout the country.

Salesrooms, 84 & 86 Chambers Street, New York City. Manufactory, HOLYOKE, MASS.

JOHN WILSON'S CELEBRATED

TRADE MARK.

"FOUR PEPPERCORNS AND A DIAMOND"



GRANTED A D 1766 BY THE CORPORATION OF CUTLERS OF SHEFFIELD AND PROTECTED BY ACT OF PARLIAMENT

REGISTERED ALSO AT WASHINGTON U S A ACCORDING TO ACT OF CONGRESS

ALSO AT LEIPZIG, IN ACCORDANCE WITH THE GERMAN TRADE MARKS' REGISTRATION ACT

BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.

It having come to the knowledge of JOHN WILSON that Counterfeit Butchers' Knives, purporting to be of his manufacture, are being sold in the United States, he hereby cautions all purchasers of his Knives and Steels to be on the alert against such imposition.

JOHN WILSON also hereby gives Notice, that it is his determination to institute Legal Proceedings against any person or persons who may be detected infringing his Trade Mark.

Every article of JOHN WILSON'S manufacture, bears the Trade Mark, in addition to the Name.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750.



BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels,

PLANE IRONS.

CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by unprincipled persons, who represent them as our make. Our tools are stamped "BUCK BROTHERS," and our labels have on our trade-mark, also "Riverlin Works."

FINISHED

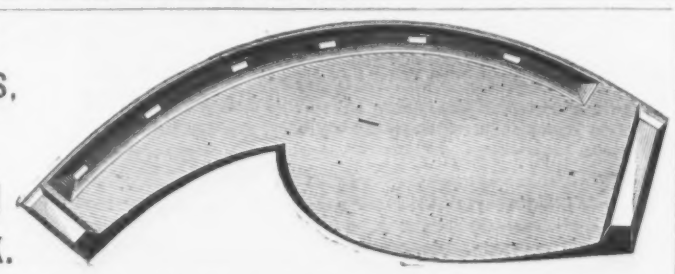
Ox Shoes,

WITH

Steel

Converted

Toe Calk.



IVES, WOODRUFF & CO., Manufacturers,

MOUNT CARMEL, CONN.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoes and Mattocks,
Mill Picks,
Box Chisels and Scrapers,
Ring Bush Hooks,
Ax Eye Bush Hooks,
Socket Bush Hooks,
Watt's Ship Carpenters' Tools,
Carpenters' Drawing Knives,
Coopers' and Turpentine Tools.

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MARTIN DOSCHER, Agent, 85 Chambers Street, N. Y.

Cutlery.

ALFRED H. HILDICK,

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Importer of **CHAINS, ANVILS, VISES, &c.**

Agency of

HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

CORPORATE MARK.



Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. & W. CLATWORTHY, Agents.

The demand for **Joseph Rodgers & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

P. O. Box 3962.

ESTABLISHED 1836.

Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery,

SPECIALTIES.

Headquarters for

ELEYS BROS.' GOODS, WRIGHT'S ANVILS,
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS.
BUTCHER'S FILES, TOOLS AND RAZORS.
STUBS' FILES, WESTERN FILES,
GREAVES' SHEEP SHEARS,
CHESTERMAN'S TAPES,
GERMAN COIL AND HALTERS and other CHAINS,
BRADES' TROWELS AND HOES,
CANASTOTA KNIFE CO.'S POCKET KNIVES.
Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for import and export purchased on commission.

ROBERT SORBY & SONS,

SHEFFIELD,

MANUFACTURERS OF THE CELEBRATED

Kangaroo Sheep Shears,

The best Shears made.

CORPORATE MARK



Every Shears Guaranteed.

ALFRED FIELD & CO.,

93 Chambers St., - NEW YORK,

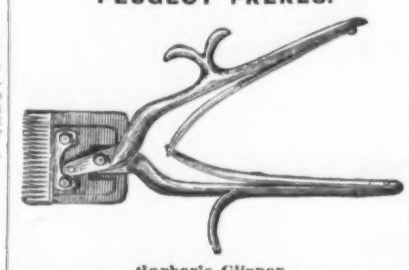
SOLE AGENTS.

Send for price list and terms.

Cutlery.

French Clippers

PEUCEOT FRERES.



Barber's Clipper.

We are sole agents for these Clippers. All orders should be addressed to us to obtain lowest prices.

McCOY & SANDERS,

132 Duane St., New York.



Horse Clipper.

Silver Medal, 1878—Paris.



J. R. SPENCER & SON,

Albion Steel Works, Sheffield,

MANUFACTURERS OF

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STEEL,

Table Knives, Razors, Shovels, &c., &c., of every description.

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Granted 1749.



Manufactured by **COPELAND, HALL & Co.**, *Rochester, N. Y.*

Coulter, Flagler & Co., Sole New York City Agents.

THE MERIT OF

MARTIN'S PATENT CASTER

SECURES STEADILY INCREASING SALES.

GIVE US SAMPLE ORDER AND YOU WILL BE THEIR FAST FRIEND.

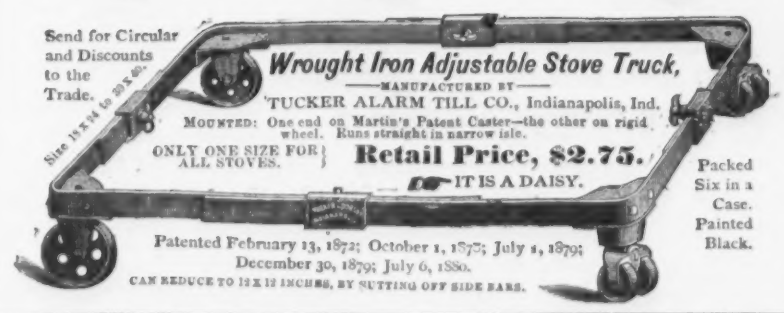
☞ Send for Illustrated Catalogue.

PHOENIX CASTER CO.,

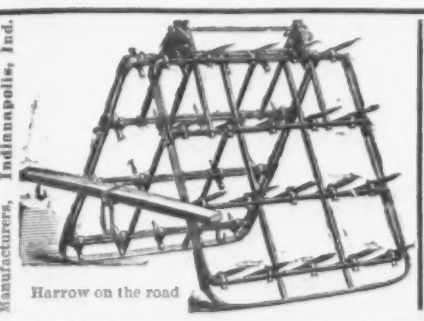
Indianapolis, Ind.



Send for Circular and Discounts to the Trade.



Rogers' Duplex Harrow.
M. E. BUNGER & CO.,
Manufacturers, Indianapolis, Ind.



Harrow on the road

We make Till either for Coin or Scrip.



Can be applied to any implement, either with or without tongue.



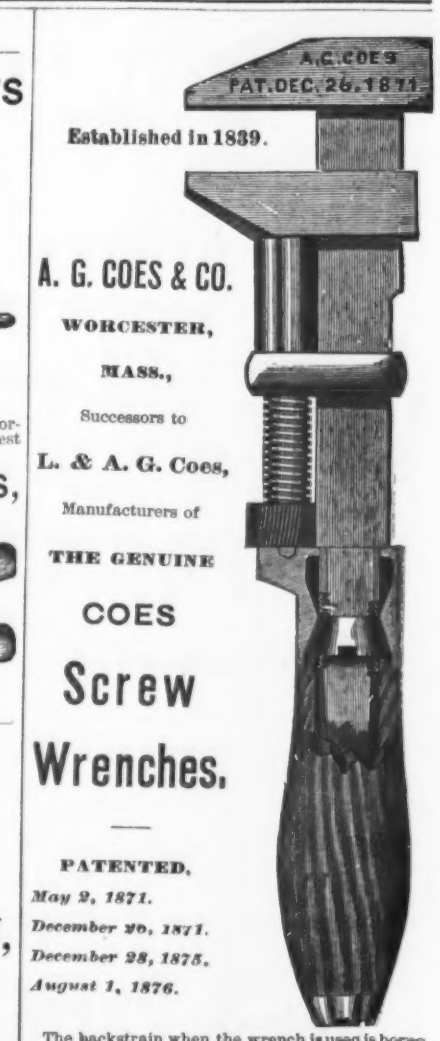
A perfect attachment for either 2 or 3 horses.

Send for Price and Illustrated Circular.

M. E. Bunger & Co., Indianapolis, Ind. Makers.

A perfect Double Tree
A perfect Equalizer
A perfect Stretcher.

The best selling implement in America. Just the thing for fall plowing.



Established in 1839.

A. G. COES & CO.

WORCESTER,

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Successors to

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Manufacturers of

THE GENUINE

COES

Screw Wrenches.

PATENTED,

May 2, 1871.
December 26, 1871.
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August 1, 1876.

The backstrain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made, and the only successful Re-enforced Bar.

None genuine unless stamped

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Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

CLOTHES WRINGERS.



Self-Adjusting
Steel Elliptic Spring.

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BOSTON, MASS.

Romer & Co.

Established 1837.



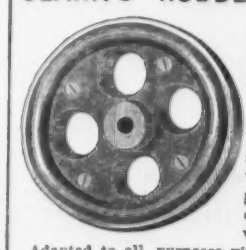
Manufacturers of Patent Scandinavian or Jail Locks. Brass Pad Locks for Railroads and Switches. Also Patent Stationary R. R. Car Door Locks.

HANDCUFFS AND LANTERNS.

141 to 145 Railroad Avenue, NEWARK, N. J.

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CLARK'S RUBBER WHEELS.



This wheel is the best now in the market, and is attracting the attention of large manufacturers on account of the great saving of floors, which is ten times greater than the extra cost of this wheel.

Adapted to all purposes, viz., Warehouse trucks, platform trucks, scales, boxes, baskets and heavy casters. For full particulars see the first issue of *The Iron Age* next month, or address

GEO. P. CLARK, *Windsor Locks, Conn.*



"DRAW CUT"

BUTCHERS' MACHINES.

Choppers, Hand and Power

Stuffers,

Lard Presses.

Warranted thoroughly made and the BEST IN USE.

MURRAY IRON WORKS,

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Manufacturers of

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FOR ALL PURPOSES.

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Superior Silver-Plated Table Ware.

REGAL.



Patented Jan. 20, 1880.
Same price as "OLIVE."

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W. E. UPTEGROVE, foot 10th & 11th Sts., East River, N. Y.

Bechtelsville Furnace of the Pottstown Iron Company.

At the Scott Foundry, in Reading, a cotton press weighing 150 tons has just been completed for an Alabama planter.

Stack No. 4, of the Allentown Iron Company, which has recently undergone thorough repairs, will be lit in a day or two. The five furnaces will then be in operation, a condition of things that has not existed lately.

The Phœnix Iron Works, at Pottsville, are turning out 50 tons of iron a day.

The coal product of the Schuylkill region for the week ending August 28, was 101,326 tons, as against 102,763 tons for the week previous and 181,576 tons for the corresponding week of last year. The total product for the week was 418,187 tons, against 561,267 tons for the same week of last year—a decrease of 143,080 tons. The output for the year so far is 13,721,275 tons, against 16,560,657 tons for the corresponding week of last year—a decrease of 2,839,382 tons. —*Pottsville Journal.*

The Parker Glass Company, Limited, began operations on Saturday last, and had excellent luck with their first melt. They are now in full blast.

The new 14-pot furnace of the Rochester Tumbler Company is completed, and pots were set in it on the 4th. As this is the largest furnace ever erected in that vicinity, some curiosity is evinced by manufacturers to know how it will work.

We clip the following, regarding the furnaces and production of pig iron in Berks County, from the Reading *Eagle:*

ANTHRACITE FURNACES IN OPERATION.

	Tons.
Reading Iron Works, one furnace; Keystone Furnace Company, one furnace; Eckert Bros.' two Henry Clay furnaces	700
E. & G. Brooke Iron Company, Birdsboro, two furnaces	375
Temple Iron Company, two furnaces	240
Monocacy Iron Company	150
Theodore Garretson's two furnaces at Lyons	200
Wm. M. Kauffman & Co.'s Topton and Kutztown furnaces	320
Leibrandt & McDowell's Moselem Furnace	100
Total anthracite iron per week	2,085

Five anthracite furnaces are at present out of blast. Two of these are located at Reading, one at Robesonia, one at Leesport and one at Birdsboro.

CHARCOAL FURNACES IN BLAST.

Sally Ann Furnace, near Bowers Station, belonging to the Rockland Iron Company.
Oley Furnace, near Friedensburg, Clymer Iron Company.
Maidencreek Furnace, near Lenhartsville, Spang, Erb & Co.
Union Furnace, near Hamburg, D. B. Fisher.
Mt. Penn Furnace, Cumru Township, Wm. M. Kaufman & Co.
Joanna Furnace, at Joanna, on line of Wilmington and Northern Railroad, Heber Smith.
Hampton Furnace, Birdsboro, E. & G. Brooke Iron Company.

The charcoal furnaces make on an average about 32 tons per week, making a total production of 224 tons.

Only 18 furnaces were in blast on the line of the Philadelphia and Reading Railroad at this time last year. Now there are 49 in blast, with 37 awaiting a certainty of a steady continuance of the advance to begin operations.

The Philadelphia Steam Forge has removed the city office to No. 315 Willings alley. The forge, in addition to its already large business in steel forgings, is making all sizes and grades of merchant steel, of a quality which, before its suspension, made this works one of the foremost in the market.

The Philadelphia Screw Company, Limited, report the opening of the fall trade as very satisfactory. They are now filling large orders, including special orders for brass screws, which are claimed to be very superior in point of quality and finish.

The Philadelphia Smelting Company have recently taken orders for 7000 car journals, a good portion of which are to be of their deoxidized bronze. They have been very successful in introducing this specialty, and have testimonials of its merit from many leading concerns. They are also doing a large business in name plates for machinists, as well as in ornamental art work for churches, &c.

PITTSBURGH AND VICINITY.

A large vein of gas has been struck in the new well at Leechburg, which Major Beale, of the late firm of Kirkpatrick, Beale & Co., is putting down. The well is now at a depth of 1214 feet.

The Pittsburgh and Lake Erie Railroad cleared over $40,000 last month, at which rate, after providing for interest accumulated, there will be left $360,000 profits for stockholders for the year's work. On the present issue of stock this is about 15 per cent. The stock, which was quoted at $25 per share, sold as high as $55 per share last week—10 per cent. above par. While the road promises to be a good thing for the stockholders, it has already proved an immense thing for the general public in the way of knocking down freight rates.

The Dithridge Chimney Company, Limited, have had unusually good luck with their furnace since starting up, not a single pot having broken. The pots were furnished by the Pittsburgh Clay Pot Company.

Week before last, Furnace B, of the Edgar Thomson Steel Works, run out 1225 tons of iron, this being the largest output ever made by the furnace.

The first glass was blown at the new glass works at Monongahela City on Tuesday, the 7th instant.

The following is a statement of the coke and coal shipments by river for the past two months:

1880.	Pool No. 1. bushels.	Pool No. 2. bushels.	Pool No. 3. bushels.	Pool No. 4. bushels.	Total. bushels
July	156,750	976,700	632,000	909,100	2,664,550
August	910,900	1,181,100	524,800	906,100	3,522,900
For the two months of July and August					6,187,450
For the six months ending July 1					57,485,916
Total for the eight months of 1880, ending August 31					63,673,366

The largest recent transaction in ore lands in this State was consummated on Saturday by the Edgar Thomson Steel Works. The transaction embraces two purchases from Moses Thompson, of Lemont, Center County. The first was the purchase for $96,000 of the mining privilege upon 300 acres of his land, all risks to be assumed by the purchasers, so far as the quantity and quality of the ore is concerned. The company also secured the option to take all the ore from an additional 300 acres for $100,000, the option to expire July 1, 1881. These mineral tracts are in Patton Township, Center County. The ore is described as a good quality of hematite, almost free from phosphorus.—*Pittsburgh Telegraph.*

The Hartupee suit against the city of Pittsburgh for a large amount is now on trial.

WEST VIRGINIA.

The repairs to the Riverside Furnace are going on as rapidly as possible, and the furnace will go into blast in October.

OHIO.

The Ohio and West Virginia Railroad—a branch of the Columbus and Hocking Valley road—is completed to Gallipolis, and is already beginning to transport large quantities of coal, iron, fire brick and other goods direct to the river. This is one of the most important of Ohio roads, creating an outlet to the Ohio River from the North and Northwest Ohio which has long been needed. The Columbus and Hocking Valley Railroad, with its Columbus and Toledo and West Virginia lines, furnishes means of transportation from Chicago, Toledo and other points on the lakes to the Ohio River direct. The road is doing a fair business, and its freights are likely to be largely increased during this year.

The works of J. E. Hull, at Cincinnati, are running very full in the manufacture of power and hand tinners' tools. Mr. Hull is just placing in the market a very fine little bench tool, combining a shear and punch. It is so constructed that shearing and punching can be done at the same time if required. For light work, this tool is very convenient and effective. It takes very little room, is made in two sizes, and has a capacity for punching from 1/8 to 1/4-inch iron.

The Cincinnati Exposition is in full blast. The attendance was larger for the first four days than during the first four days last year. At the opening it was announced that Mr. C. W. West, of Cincinnati, had generously subscribed $150,000, provided a like sum could be raised (making $300,000), for the benefit of the proposed Art Museum. In response, a number of citizens met at the Chamber of Commerce for the purpose of organizing a committee, of which Mr. Julius Dexter is president, Mr. W. W. Taylor secretary, and Mr. L. Seasongood treasurer. At this meeting $28,000 were subscribed, and a number of gentlemen expressed their intention of making liberal subscriptions. The exhibits in the Machinery Hall are all in and the machinery running. This department is certainly very interesting, there being many new machines possessing merit. The exhibits of stoves, ranges, furnaces and house-furnishing goods are very creditable to the numerous exhibitors. The iron ores, manufactured iron and coals exhibited present a fine display, showing a great variety of ores and coals and their products. The Art Gallery is very full, embracing many of the finest works of art known in this country. The general interest manifested in the Exposition seems to promise success.

The Steubenville Furnace, leased by the Steubenville Furnace and Iron Company to F. Bates, of Cleveland, last June, was blown in on the 9th inst., after undergoing thorough repairs. The new managers expect to turn out from 60 to 80 tons per day.

The Volcano Furnace, at Massillon, which has been idle for the past four years, blew in on the morning of the 9th inst.

The Buckeye Glass Works, at Martin's Ferry, resumed operations in all departments on the 7th inst.

The Jefferson Iron Works, at Steubenville, shut down last week, owing to the coal miners' strike. The shut down will not last long.

The Massillon Rolling Mill started up on the 4th inst. They are now running double turn and employing some 80 hands.

The Bellaire Window Glass Works blew in one furnace on Thursday last, and will blow in the other this week. The glass made is good.

Work on the repairs to the Benwood Furnace, at Martin's Ferry, is going on rapidly. New hot-air pipes are being put in and the blast is being reconstructed. The repairs to the furnace and stack are progressing finely.

The Baird Furnace, the pioneer of the Hocking Valley, after being idle for some time, blew in on the 1st inst.

The Goblet Works, at Bellaire, are running very full, and have a large number of orders ahead.

Lawrence Furnace, at Ironton, is working well on charcoal iron.

ILLINOIS.

The Phœnix Chain Works, of Chicago, report that they are behind in their orders, although employing a full complement of men and exacting 10 hours per diem.

The Northwestern File Works have completed their contemplated extension of premises in Chicago, and are now prepared to fill all back orders, and are ready, with five extra benches, to fill all new orders that come along.

MISSOURI.

The St. Louis *Age of Steel* gives a list of 26 large boilers now being manufactured at the works of Rohan Bros,, of that city. Nineteen are to be of charcoal iron and seven of steel.

The St. Louis Stove Works have almost completed an addition to their establishment in the shape of an extensive foundry.

The rolling mill which is run in connection with the works of the St. Louis Stamping Company has just put in a large new steam hammer. The mill has plenty of work.

The Laclede Rolling Mills are running full time on light rails and merchant iron.

Broderick & Bascom, St. Louis, have been working 50 hands overtime on wire rope and cordage during the months of July and August, and, owing to the continued heavy demand, their works will be urged to their fullest capacity during the current month.

WISCONSIN.

At the Chace Glass Works, at Milwaukee, there is to be erected another building, which will accommodate a third furnace.

The window glass blowers in the West have secured an advance of 10 per cent. in wages over those paid last year. They compel the manufacturers all over the West to limit the production of their factories to 48 boxes of 100 feet per week to every pot employed.

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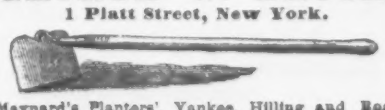


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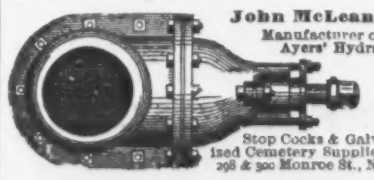


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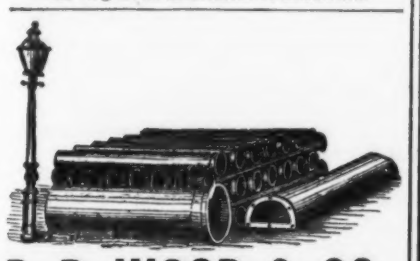


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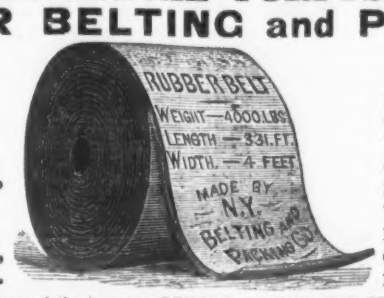


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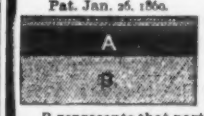


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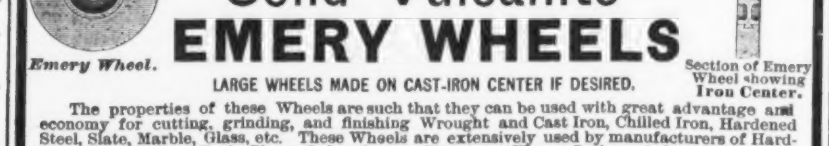
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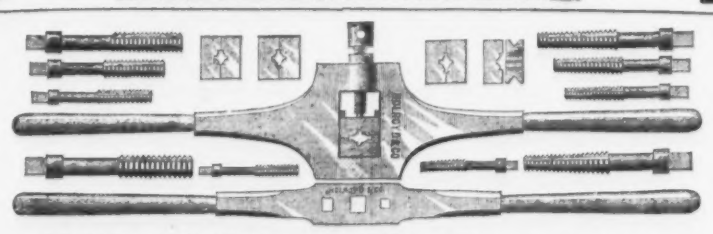


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The Iron Ores of the Ottawa Valley.

To the Editor of The Iron Age. — DEAR SIR: Your journal being the recognized organ of the iron interest, I crave space to lay before your readers a slight sketch of a most valuable iron deposit in the Ottawa Valley, in the hope that the attention of those engaged in the trade and of capitalists generally may be directed to this section, and that steps may be taken to develop this valuable property. It is located in the Province of Quebec, a few miles from the city of Ottawa, and consists of 100 acres, the whole area showing strong indications of iron. It is underlaid by micaceous and gneissoid strata referable to the higher portion of the Laurentian series. The ore is very free from intermixed rock matter, and is in other respects of very remarkable purity, as may be judged from the following analyses:

ANALYSES MADE ON THE ORE.

	Metallic iron	Totals	Peroxide or sesquioxide of iron	Protoxide of iron	Titanic acid	Protoxide of manganese	Magnesia	Lime	Phosphoric acid	Sulphur	Graphite	Insular rock matter	Oxygen with iron	Alumina	Silica		
1	69.34	99.96	89.80	7.60	2.34	trace	trace	0.32	0.13	0.55	0.16	trace	0.43	0.11			
2	66.98	100.14	88.08	6.86	3.17	0.55	0.41	0.17	0.41	0.55	0.03	0.26					
3	63.88	100.05	85.45	5.24	9.12	0.41	0.47	0.41	0.13	0.07	0.28	5.77					
4	64.24	100 34	87.40	3.93	3.41	0.37	0.47	0.66	0.35	0.10			1.69	2.10			
5	66.62	100.00	55.93	10.09	3.84		0.08	0.13	0.14	0.03		1.09	26.85	0.49	1.34		
6	64.00	100.00	76.98	0.87		0.06	1.13	0.14	0.12	0.04			8.70	*8.07			
7	68.49	100.26	89.04	7.92			0.40	0.56	0.23	0.04			0.32	1.77			

* Acids.

Nos. 1, 2, 3, 4, 5 and 6 are from surface ores; No. 7 from bed ore.

The ore beds appear to widen as they descend. The ore is hematite, and contains a small amount of magnetic oxide and traces of graphite, by which, in most samples, the normal red streak is rendered grayish black and lustrous. As a rule, the ore is practically non-magnetic; it is remarkably free from titanic acid. Dr. Harrington's (of the Geological Survey of Canada) analysis detected no titanium in it; Dr. Wath's (of Pittsburgh) showed 0.97 per cent.; Prof. Riley's (F. C. S.) detected none, though carefully tested for it; Mr. Blodgett Britten's, 3.94 per cent.; Mr. Wendell's, 3.41 per cent.; and Prof. Chapman's, 2.12 per cent. In the words of the latter distinguished mineralogist: "This general freedom from titanic acid is corroborated by the high specific gravity of the ore, and by the comparatively easy solution of the ore in hydrochloric acid. It need scarcely be observed that an amount of titanic acid averaging no more than 2 or 3 per cent. does not in any way affect the practical value of the mineral." The purity of the ore and its capability of making a superior quality of steel is indicated by the analyses. The tests made by melting the ore have proved very satisfactory, giving in all cases at the first heat a fine quality of steel, from which tools have been made taking a good cutting edge. On account of freedom from earthy matter, it is especially adapted to the manufacture of steel by the direct process—that is, without the ore having been first converted to pig iron. The manager of a large iron works in the United States writes as follows: "I have received the samples of steel, together with the samples of ore from which the steel was made, and after careful examination I may say that I consider it one of the very best ores in the world for the manufacture of steel."

The location is easy of access, and shipments by water or rail can be made without difficulty. When the bridge across the Ottawa is completed (which will be within the next two months) the location will be brought within railway communication with all parts of the United States, and by constructing a short switch, the ore can be loaded on the cars almost at the pit's mouth, and, as labor is abundant and cheap, the very best facilities are afforded for getting the ore at a low rate.

Yours truly,
EDWARD C. BARBER.
OTTAWA, CANADA, September 2, 1880.

Dr. Charles T. Jackson.—Dr. Charles T. Jackson died at Sommerville, Mass., on Sunday, August 29. He was born at Plymouth, Mass., June 21, 1805, of a family descended from the oldest settlers. His health failing in youth from over-study, he made a scientific tour of New York and New Jersey on foot with some well-known scientists, and then studied medicine. In 1827 and 1829 he made a mineralogical and geological survey of Nova Scotia, and then went to Europe. After medical and scientific studies in Paris he made a pedestrian tour to Central Europe and dissected many victims of the cholera at Vienna, publishing his medical observations in the Boston *Medical Journal*. Then he made a geological tour of Italy and Sicily. In 1837 occurred his celebrated controversey with Prof. S. F. B. Morse over the electric telegraph, which Dr. Jackson also claimed to have discovered. From 1836 to 1838 he was State Geologist of Maine, in 1839 of Rhode Island, and from 1840 to 1843 of New Hampshire. In 1844 he began his exploration of the mineral lands of Lake Superior's southern shore, which made their wealth known to the world. In 1847 he was appointed by Congress to survey the mineral lands of Michigan. He subsequently made many other chemical investigations and discoveries, and claimed to have discovered the use of ether as an anæsthetic in surgical operations. He regarded this as a triumph of his life, and was bitterly disappointed at having the claim disputed by Dr. T. G. Morton, to whom the world has generally awarded the honor of it. Dr. Jackson had been an invalid for seven years.

The Stove Business in the West.

The Metal Worker of Sept. 11th says: During the past few weeks we have had opportunity of making a somewhat careful inquiry into the condition and prospects of the stove trade in the West, and find on every hand a state of affairs which gives more than a promise of a satisfactory season's trade. Chicago is the great Western distributing center for the stove trade, and nowhere can a better idea of its general condition be gained than from Chicago jobbers and manufacturers' agents. With these gentlemen the only difficulty seems to be in keeping up with their orders, and the only apprehension for the future a fear that manufacturers' stocks, which should last in fairly good assortment until about the 1st of November, will be exhausted by or before the 1st of October. In some instances we have been shown reports of goods on hand at the foundries, which would not begin to supply the orders already taken by the Chicago agents for goods of which they have no stock in warehouse. We presume stoves enough to fill the imperative requirements of consumption will be found before the season is over; but from present indications, it is quite safe to predict that the end of the season will find manufacturers with very small stocks to carry over.

In thus generalizing it would not be fair to overlook the fact that there are some differences of opinion among those representing the large distributing interest in Chicago. Some believe that the good trade will last throughout the season, and that long before the demand shall cease stocks will be so broken that dealers will only be able to fill their orders by shopping around, picking up a few stoves here and a few there. Others are less confident. They say that a continuance of good trade is doubtful; that dealers, alarmed by their experience last year, are ordering a month earlier than they would if they were not afraid of being caught, and that the demand will fall off much earlier than it would under normal conditions. They say, further, that so far as cook stoves are concerned, the trade in Chicago is likely to be a disappointment. Last spring dealers were loaded up pretty heavily with cook stoves, which they were unable to sell and are still carrying. In view of this fact it is assumed that they will not buy largely of cook stoves this fall. We are not in a position to speak positively with regard to these aspects of the trade, but from all that we can learn it seems probable that the expectations of those who predict a continuance of satisfactory trade will be realized. In all parts of the West visited by the writer during a somewhat extended tour, the evidences of prosperity are conspicuous. People are making money, and there is no reason why they should not feel as much disposed to spend it as they usually do under like circumstances. Such actual damage as the crops have suffered will not unfavorably affect the prosperity of the farming classes, unless locally in a few districts. It is much more probable that the production will be in excess of the requirements of trade and that prices will decline in consequence. But, in any event, the harvest will bring immense sums of money into the West, and this will largely find its way back through the channels of trade. We must also make due allowance for the heavy immigration, the subdivision of families and the migration of population. As we said early in the season, some still believe that all the stoves made this year will be needed, and this, we are confident, is especially true of stoves adapted to the Western markets.

With regard to collections we hear only satisfactory reports. The trade have generally scanned credits rather closely, and within the past few years dealers have learned to appreciate the substantial advantage of a good credit. The Chicago trade say they have very little trouble in making collections, and that, generally speaking, Western dealers are in a very sound condition. The multiplication of small foundries throughout the West makes a new and somewhat serious competition in common goods, but probably this is not felt so seriously in the West as in the East. A curious and difficult question is raised by the success of these small foundries, which has troubled the larger manufacturers not a little. They manage to sell goods of certain classes at prices which the large houses competing with them cannot meet without losing money; and yet they seem to prosper in a small way, and to extend from year to year. Theoretically, they cannot make stoves so cheaply as the large concerns, which melt a great deal more iron and give closer attention to the minor, as well as the major, economies of production and distribution; but like goats, they manage to live and thrive where cattle would starve to death for want of pasturage. Their competition is perfectly legitimate, and must be recognized as a factor of no small importance in the equation of profit and loss. Small foundries of this character are springing up all over the West. They make only such goods as they can sell cheaply and find a local market for. Their proprietors are practical molders, who do most of the work and are content with modest support. On this basis they can be sustained, but their danger will come when success in a small way prompts them to extend their operations and make a larger line of goods. The position of a small foundry, without adequate financial resources, undertaking to make a general line of goods and to compete for trade beyond its immediate neighborhood, is one of peculiar peril. It is between the upper and the nether millstones of competition, and the chances are many to one that it will be ground to dust.

The Salineville (Ohio) miners have resumed work after a three-months' strike at the reduction proposed.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, September 16, 1880.

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It is unfortunate, for some reasons, that protection vs. free trade or its equivalent, has been allowed to practically drop out of sight as a political issue. The platforms of the two great parties take opposite sides on this question, but no one attaches much importance to platform utterances, and, as a consequence, both parties send to Congress and the Senate friends and enemies of protection. In keeping the vital importance of this question before the country the American Iron and Steel Association are doing a good work, which deserves the hearty cooperation of all classes of producers, whether employers or employed. The work of this association is non-partisan, but it keeps ever in view the principle of protection to American industry, and at a time when confidence and contentment beget a lax interest in this great economic problem, the work this association are doing in the broadcast circulation of a clear, logical, consistent and convincing literature of protection, is of the greatest value. It ought not to be necessary to educate our people, proverbially clear-headed and farsighted as they are, to see and appreciate the benefits of protection; but it and those who are carrying on this important work should not lack sympathy and encouragement from those for whom the service is rendered. However widely they may differ on other subjects, there should be no differences with regard to protection among producers. Generally speaking, there are not; but producers are often led by their partisan affiliations to betray their own interests by electing to Congress men who will labor to destroy our national industrial prosperity, and deprive capital and labor alike of all the advantages which protection affords. Such men need waking up. There is no political issue half so important as this one, and no danger menaces the country which can be compared with that which may result from the indifference to their own interests of those who have prospered under protection.

The Money Market in Europe and America.

One of the most remarkable features of the past six years in the money markets of both Europe and America has been the extreme ease and low discount. During the first few years which followed the panic this abundance of capital was attributed solely to dullness in trade, to the absence of all speculation in merchandise, and to the determination of capitalists not to invest their money in or lend it on anything but the most undoubted securities. A year ago business suddenly revived, and with it speculation in merchandise. Capitalists showed more confidence, the various stock exchanges of Europe and America launched out boldly, and many industrial shares were unearthed that had been lying dormant, almost unsaleable, since 1873. Enormous amounts of specie had to be sent from Western Europe to America and elsewhere for food, and it looked as though money would become very active in England, France and Germany, with a material rise in the discount figure. But nothing of the kind occurred. Discounts advanced a little, it is true, but soon declined again. The discount rate at the Bank of France is probably the best measure of the value of ready money in Europe, because less influenced by certain special and local causes than that of the Bank of England. Discounts at the Bank of France were as follows:

	Per cent.	Value 3 per cent. rentes.
August 25, 1876	3	71.65
August 23, 1877	2	71.20
August 22, 1878	2	76.70
August 21, 1879	2	83
August 19, 1880	2½	85.45

Discounts at the Bank of England at corresponding dates were:

	Per cent.	Consols.
August 25, 1876	2	96¼
August 23, 1877	2	95¼
August 22, 1878	5	94 15-16
August 21, 1879	2	97 13-16
August 19, 1880	2½	97 13-16

The disturbance in the London money market from August to December, 1878, it will be remembered, was caused by the many bank failures which for a time created a feeling bordering on panic, but may be looked upon as altogether confined, at the time, to England; the Continental and American discount markets remaining almost wholly unaffected thereby. Looking, then, at the Paris discount as the safest criterion, it will be seen that it has varied but little at this time of the year, when money is most in demand in the agricultural regions for harvesting and crop-moving purposes.

But while the discount market has hardly changed, the value of 3 per cent. French "rentes" has risen in four years from 71.65 francs to 85.45—an improvement of 20 per cent., or 5 per cent. per annum, beside the interest collected in the meantime. The French "rentier," large or small, therefore, by simply holding on to his "rentes" cleared, during the past four years, if he sells at to-day's rate, 8 per cent. per annum—probably about the best business the greatest activity and enterprise could have procured in his country. People who have clung to good securities in Europe and America during this interval have all done well, if not quite so well as this, and it has been the rule with most capitalists as regards so-called movable property in contradistinction from real estate. During the past 12 months, however, this inactive investment in good bonds has been, to a considerable extent, abandoned by many capitalists, who have realized them, or money on mortgage, and have returned to real estate, merchandise and all sorts of industrial undertakings. But in spite of the greater activity in all these branches money has remained, so to speak, a drug with the correspondingly low discount.

From all this we are led to the conclusion that the accumulation of surplus earnings or profits has been going on so rapidly in Europe and America for the past few years that the demand has been unable to absorb this capital. We furthermore believe that this same cause will continue to operate for some time longer, perhaps for a couple of years, unless something extraordinary and altogether unforseen should occur.

During the past 30 or 35 years there has been an extraordinary drain on the savings of the people of Europe, rich or poor, in the shape of gas shares, railroad shares and bonds, water works, telegraphs and municipal, as well as government, loans. The 19 sovereign European states have increased their national debts as follows:

1789	$850,000,000	1847	$8,375,000,000
1819	7,525,000,000	1878	20,295,000,000

In other words, the national governments alone have increased their debts $11,920,000,000 in about 30 years, or 142 per cent. Much of this increase is due to deficits resulting from unprofitable expenditures for armaments and military establishments, war indemnities, &c. Some of the national debts of Europe are now nearly worthless. On doubtful national credits, like those of Spain, Turkey, Egypt, Peru and many more, there is no more money to be obtained in Europe. But the surplus earnings of capital and labor continue to accumulate, and it is not surprising, in view of all the facts, that legitimate industries, production and distribution, find it easy to borrow at low rates.

It is a gratifying sign of the times that both here and in Europe there is a growing disposition to manage capital on sounder business principles. Those with money to lend are discriminating more closely and intelligently between good and doubtful investments. Those which are safe and which promise moderate interest are counted better than those which are doubtful, though offering 8 to 12 per cent. But for this tendency, the brilliant policy of the United States in the refunding of its bonded debt at lower rates of interest would not have been possible, or, at least, it would not have been conducted with so much ease. The census of 1880 will afford, so far as this country is concerned, some idea of the accumulation of capital during the past ten years, and as values are now on a solid basis the figures will not be misleading, as they would be in a time of inflation.

Railroads in Mexico.

American enterprise seems to have taken hold of the work of providing Mexico with railroads at the right end. The only road of any consequence now operated in Mexico is the line from Vera Cruz to the capital. Of those projected, the most important are probably the Sonora and the Mexican Central. These corporations are organized under the State law of Massachusetts, and are controlled in the interest of the Atchison, Topeka and Santa Fé road. The Sonora road is to meet this line on the Arizona frontier. It represents a subscribed capital of $1,200,000. The Mexican Central is to connect El Paso to the capital, with branches to the west coast and to Laredo. Work on these lines is pushing rapidly forward, and the material aid which has been extended to them in the shape of land grants and mileage subsidies is said to be sufficient to insure the financial success of the undertakings. A line competing with the Mexican Central has been projected by the Southern Pacific interest, and the San Antonio and Mexican Border Company have another in hand from San Antonio to Laredo. This is important, as it will connect the Rio Grande with the California Coast and the railroad system of the United States. Several other roads have been surveyed, and within two or three years we may expect to see a great change wrought in the crippled and impoverished republic south of us. The extension of railroad facilities, the development of commerce, and the introduction of Northern enterprise and capital will send the thrill of a new life through the Mexican nation. Commerce is the most potent of civilizing agents, and when the work of the railroads is accomplished Mexico will have a stable government and whatever else contributes to the prosperity of a people and the permanence of their institutions. It would seem as if the risk incurred by capital at the outset was great, but there can be no doubt that the work now in hand will ultimately accomplish great good and yield large returns.

Recent Attempts at Tariff Tinkering.

H. B. James, the efficient Chief of the Customs Revision of the Secretary's Office, Treasury Department, has completed a careful analysis of the various measures in the recent Congresses to change the duties on imported articles, from which he proposes to prepare a carefully-digested review of the Wood and Morrison and kindred schemes, to show that the whole theory of these attempts originated in wrong premises, and not only reversed hitherto admitted principles, but in plain English demonstrated conclusively that neither of those gentlemen had at any time in their careers troubled themselves to study the delicate questions involved in the serious matter of legislation on subjects of industry and revenue. In the Wood bill particularly, Mr. James has found that the veteran politician, who never was and never will be a statesman, sets out to reverse the usual and natural order of things by raising the duty on the raw material entering into manufacture in the United States, while the duty on articles manufactured out of those materials is largely reduced. For instance, he proposed to raise the duty on wheat and reduce that on flour. The entire bill is full of such incongruities, and serves to demonstrate the constant danger to which the great industries of the country are subject through the inexperience of the men who are placed on important committees, and generally overrule with their crude notions the matured views of men who have made such questions a lifelong study. The review of Mr. James will have one important result, that of exposing the dishonesty of most of the antitariff and revenue reform schemes which have agitated the public mind and disturbed the industrial interests of the country. The necesity of a revision of the customs duties is insisted upon by many able men, but they oppose any tinkering processes and only favor revision on correct principles and with a proper regard for the interests of American producers.

Germany's Reasons for Protection.

A very interesting official report on the tariff agitation in Germany has been received at the Department of State, in which the economic and trade conditions of this perplexing question are practically illustrated, and some important experiences of a great nation which had permitted itself to fall into the illusory and narrow-sighted notion that foreign competition necessarily stimulates home industrial activity, are described in the attempts of her political economists to follow the theories so persuasively advocated by the English free traders. Germany's industries suffered the natural consequences. The depression during the period 1874-79, which so nearly put an end to German industries, afforded a lesson which German statesmen have accepted as better than all the fine reasoning of the Cobden Club tract makers. The report, speaking of the condition of the industries of Germany when wiser government enactments rescued them from destruction, says that "everything had "been reduced to the severest commercial re- "quirements." Production had been brought within the circle of absolute demand, and expenses had been cut down to the lowest living rates. Capitalists and workmen shared proportionately in these reductions. Old stocks were disposed of, even at a loss, when necessary. This brought the country to that sensitive condition where the slightest improvement would be immediately felt; and when the increased demand from the United States for iron and leather goods poured in upon Germany in the latter part of 1879, the entire industrial interest of the country assumed an air of busy preparation, all feeling and hoping that the better times had dawned at last. While some are disposed to treat the depression as entirely due to economic considerations, the free-trade experiment is conceded by the more comprehensive thinkers to be the real cause. The position of Germany, commercially speaking, was such that, aside from the bad policy of being subordinate to other nations for staple articles of manufacture, she was excluded from a market on all sides by nations that nurtured their home industries by a wise system of protection. While England offered the only market open to Germany, it did not require many months to demonstrate the absurdity of trying to compete there. In addition to this, the English manufacturers promptly turned their surplus upon Germany, with results shown by costly experience.

The report says that the protective tariff of Germany is now the hope of the people. By its aid they expect to re-establish the industrial activity of the empire and restore the equilibrium of trade. There is a strong party who still insist that protective measures are not the remedy, and that the relief will only be temporary. They claim that while some industries may be benefited others will suffer, and that the aggregate results will be unfavorable. Fortunately for Germany they are in the minority.

There is one feature in the German protective measures which shows the desperate extremity to which the industries of that nation must have been driven—we refer to the imposition of a duty on breadstuffs. This was designed specifically to check the competition of American and Russian food products. Agriculture shared in the depression, and, therefore, was included in the tariff policy of the empire. This feature promises to regulate itself, as the consuming class, while favoring protection as a means of promoting manufacturing industry, and thus giving employment and a maintenance to a large share of the population, oppose a tax on food supplies which would only enhance the cost of living among the masses. Consul General Lee, in a report treating on this special branch, gives the following *resumé* of the arguments advanced by German political economists in support of the taxation of breadstuffs: It is officially argued in behalf of the duties which have been levied upon breadstuffs, that the agricultural industry of the country has languished to such an extent that protective measures had to be resorted to in order to save it from utter prostration. The present depression of agriculture is attributed to the superior powers of production of other countries and their unrestricted competition with the German agriculturists. As an effect of the duties, the government confidently anticipates a gradual decrease in the imports and a corresponding increase in the production of agricultural staples. The apprehension that the duties will increase the cost of living is met by the assurance that wages will advance proportionately. Moreover, rye and buckwheat, the standard breadstuffs of the poor, are not taxed, and the laborer, it is said, does not eat meat. It is understood, therefore, that the duties on wheat and on beef are intended as taxes on luxuries. The experience of Germany is considered a very fair illustration of what the United States might expect if any of the specious schemes of "tariff for revenue only" should be adopted. The only difference is that the party responsible for such legislation would be summarily deprived of power at the next election, and we should have a prompt return to protection, though not until after incalculable mischief had been done and our industrial development suffered a severe check, from which it would not fully recover for years. However, we see no immediate danger of such an experiment, as the men who are willing to make it are not likely to have the power to do so.

A New System of Apprenticeship.

A system of apprenticeship in some respects new has been adopted by Messrs. Richards & Dole, machinists, of Springfield, Mass. It is intended to combine the thoroughly practical education of the shop with the theoretical education of the school; or, in other words, it is an industrial school in which the most time will be given to practice instead of to theory. They propose to require of the apprentice 58 hours a week of work in the shop and 9 hours a week of study. The term of apprenticeship for those beginning to learn a trade who are under 20 years of age is to be six years, in which time, under this system, it is believed that an apprentice will be qualified to rank with the best journeymen and to earn the same wages. Those who are over 20 years of age are allowed to finish their apprenticeship in five years, and those who have worked in a shop are advanced according to proficiency. The beginner is first put to drawing from sketches, then takes up projection and diagrams, and advances regularly according to his ability. It is believed that in this way one year will qualify him as well to work from drawings as four or five years ordinarily. All applicants are taken for from 4 to 12 weeks on trial, and if not satisfactory are then dismissed. For the first year's labor 5 cents per hour is paid to those under 18, 6 cents to those who are 18, and 7 cents to those who are 20 and upward; for the next years the rate is advanced to 6, 8, 10, 11 and 12 cents. The firm also pay 2 cents per hour additional into a reserve fund, which is paid to those apprentices who finish their full term of service; for the six years this amounts to $400.

The scheme in this shop grew out of the difficulty experienced in getting thoroughly qualified machinists, and is an attempt to solve again the old problem of how to continue the system of apprenticeship, now largely fallen into disuse. It is stated that this firm already have more applicants than they can accept. The scheme certainly seems worthy of a trial. We have but little sympathy in many cases with the lament over the decadence of the apprentice system. The introduction of machinery and the consequent subdivision of labor have made it unnecessary in many trades. In some trades, however, there cannot be such a subdivision nor such machinery as will do away with the necessity for a large proportion of skilled, thoroughly educated mechanics, and the machinist's trade is one of these. The scheme we have described above certainly seems well calculated to produce workmen not only competent for the ordinary routine of shopwork, but competent to design and oversee the execution of work.

Manufacturing Accounts.

We print elsewhere in this issue, with diagrams, a paper by A. O. Kittredge, entitled "Foundry Bookkeeping." This paper was originally presented to the National Association of Stove Manufacturers at its last meeting, and was designed to show how, by a better system of accounts, manufacturers of stoves could arrive at a much closer estimate of the cost of their goods from day to day than is possible by the usual double-entry system of bookkeeping. Mr. Kittredge is an expert accountant, and has worked this system out very carefully, and with an intimate personal knowledge of the needs and requirements of a manufacturing business as regards its bookkeeping. But while he has had in mind the immediate needs of the stove founder, the system of accounts which he presents is applicable to almost all descriptions of manufacturing business, and with some slight modifications in the way of adaptation merely, it might be employed in mercantile houses with equal advantage. Bookkeeping is one of the most important parts of a business system, but it is a subject which is very seldom brought to the attention of trade associations, and still less frequently receives attention in trade and mercantile journals. Business men generally intrust this part of their business to men who have learned the system of double-entry accounts taught in the schools, and are content to know very little more about their business than can be learned from an occasional glance at the balance sheets handed them. Even these only give the merest outline of a report, and to keep informed from week to week or day to day as to the actual state of their business is something which but few manufacturers are able to do. The system suggested by Mr. Kittredge is intended to present a complete picture of the exact condition of a business from day to day which can be understood by any one who looks at it; and as this system can be applied without increased cost or difficulty, it certainly merits the consideration of the business community. All that Mr. Kittredge seeks in the system he describes is a close analysis and intelligent classification of accounts. The manager can at all times see the relation of his resources and liabilities, the cost of his manufactured product and the aggregate of his sales, all of which are constantly before him. This is

exactly what bookkeeping is for, and the system of accounts which most perfectly secures the attainment of these ends is the one best adapted to the requirements of the manufacturer.

In his address before the Iron and Steel Institute, at Dusseldorf, Mr. Edward Williams, president of that society, referred to a subject which has not by any means received that share of attention which it merits. Modern progress in metallurgy has been too striking to escape observation, but it is chiefly its achievements in the way of the production of large quantities in limited periods of time that have formed the main object of admiration. Mr. Williams has been at some pains to collect data throwing light upon another and a most important factor in the development of the manufacture of iron. He has gathered from private sources figures showing the reduction of cost in fuel and labor due to the introduction of steel for rails, and has taken for comparison the outlay for wages and coal in making an iron and a steel rail, respectively starting from the pig. He finds that taking the consumption of coal per ton of iron rails made at 100, that for making steel rails would be 35, or about one-third, and that the wages cost for iron rails being 100, such cost for steel rails was rather less than 28, showing an economy of labor equal to 72 per cent. With such figures, which are taken from works of the highest standing in England, it will not appear surprising that the cost of steel rails is steadily approaching that of the less serviceable iron rail. It is true that the fuel and the labor wasted by poor appliances in the manufacture of the latter is very great, and that reforms, urgently needed, can do much to approach the figures. But, on the other hand, it is well known that, so far as economy of labor in making steel rails is concerned, our English friends have much to learn from us. Thus, on the whole, Mr. Williams' figures may be accepted as being as fair as it is possible to make them, and it will not be astounding to learn that he computes, on the basis thus obtained, that more than 3,000,000 tons of coal and $15,000,000 are saved annually in the world in consequence of metallurgical progress in this one branch of iron manufacture.

A Philadelphia paper has reached the sage conclusion that "not a few of our manufacturers are already beginning to inquire whether it would not promote their interests to do away with high duties altogether, in order to forestall the competition of business rivals here at home. Having themselves become securely established as against foreign manufacturers, they argue that a continuance of the protective system tends to set on foot and build up new industrial establishments to contest the market with them." This may be true, but we do not remember to have met any of that kind of manufacturers during the past few years. A few may possibly talk this way in a boastful spirit, but when the tariff is menaced they turn white about the gills, and confess that they are not so well established that to throw open our markets to unrestricted foreign competition would not shake, if it did not shatter, the foundations of their prosperity. All other conditions remaining as now, it is probable that a good many of our industries could thrive without protection; but other conditions would not remain as now under free trade. The consumptive power of the community would be crippled, wages would decline, labor be crowded out of profitable employment, and what are now regarded as the necessities of everyday life would become the luxuries of the better classes. If any manufacturer says and believes that he can do as well without protection as with it, because he is well established and feels able to meet foreign competition, he shows that he has studied the conditions of his business success in a very superficial way, and that he does not know on what it really rests.

The projected steamship line from China to San Francisco, under Chinese ownership and control, will be an interesting experiment. We do not see that the Chinese or Japanese enjoy any especial advantages which would enable them to compete profitably for the carrying trade of the Pacific, but this can best be determined when we see what their plan is, and how they propose to carry it out. We have always believed that the destiny of China and Japan was to become the world's great producers of cheap goods for export. With the immense supply of cheap labor there available, the natural resources which might be cheaply developed, and a good climate, we see no reason why capital should not go there for everything it wants to produce cheaply. In fact, it is doing so already to an extent not generally known, and with a success which invites further experiments in the same direction. It would not be strange if it should be found that these nations of the East have emerged from their long isolation ripe for a progress unlike that ever before seen in the history of the world, and that the difficult arts on which they have hitherto wasted their labor have prepared them to learn, almost without teaching, the arts which have developed under a higher civilization.

The activity in the lumber trade is a satisfactory indication of the general prosperity of the country At the annual meeting of the Northwestern Lumbermen's Association in Chicago a few days ago, it was stated that in every market from St. Louis to Lake Superior sales this season have been from 30 to 40 per cent. greater than they were a year ago. It was also stated that orders from the East are "larger than ever before," and the opinion was expressed that "the mills "would be unable to produce enough to "supply the demands of consumption for "the immediate future." This means a great activity in building operations, and when the building trades are active a score of industries must prosper.

A project of considerable importance to the rolling mills and blast furnaces of Pittsburgh is under consideration. Those who are acquainted with the location of the mills and furnaces of the "Iron City" know that a large part of the hauling of materials, not only from furnace to mill, but from the different railroads to the mills and furnaces, is done on wagons at a large cost. Ore coming in on the Cleveland road cannot be sent by rail to the mills on the west bank of the Monongahela. Coke coming down the Baltimore and Ohio Railroad is delivered to the Pennsylvania Railroad, some 12 miles out of the city, to reach the furnaces on the Allegheny Valley Railroad. The Lake Erie Railroad can reach none of the others. In fact, each road has its own little lot of mills as its special field for delivery and receipt of goods. The project contemplates the connection of every mill in the city with the Lake Erie road, the new outlet run in connection with the Baltimore and Ohio, Lake Shore and Atlantic and Great Western. Two companies have been formed, composed of about the same parties as control the Lake Erie road, to build these new roads. The benefit to Pittsburgh in cheapening cost and in greater facilities for getting to market will be very great, and will still further aid in keeping freights at a low figure, which, in view of the character of Pittsburgh's trade, is a most important consideration.

During the past two months a number of conferences have been held at Pittsburgh between the iron manufacturers and the muck rollers, to revise the scale of prices agreed upon last February, the revision being necessary by reason of the change in the price of boiling. The new scale is as follows:

MEMORANDUM OF AGREEMENT

made at Pittsburgh, this 7th day of September, 1880, between a committee of the Amalgamated Association of Iron and Steel Workers and a committee of iron manufacturers, appointed to fix a scale of prices to be paid for muck rolling, based on the price of boiling, it being understood that either party shall have the right and privilege of terminating this agreement by giving 60 days' notice to the other party; but that there shall be no deviation without such notice and a conference.

It is agreed that the price to be paid for muck rolling per ton of 2240 pounds shall be 12½ per cent., or one-eighth of the price for boiling iron, from and after the 1st day of September, 1880.

It is further agreed that the price, viz., 12½ per cent. of boiling iron, shall not go below the price paid on a two-and-one-half cent card of the Western Iron Association as a basis for boiling iron.

The above price to include all labor in taking iron from squeezer, and delivering upon bank straightened, except bloom boy. In such cases where a bloom boy is used, the manufacturers hereby agree to pay one-half the wages paid to said bloom boy.

This scale, unlike the scale for boiling, can be terminated on sixty days' notice, the boilers' scale being for one year from June 1.

A Flux for Rolling Mill Cinder and Silicious Iron Ores in the Blast Furnace.*

Among the curious results of the recent advance of prices in the iron trade of the United States, one of them at least is to be regarded as of great importance. I allude to the utilization of mill cinder as a cheap and almost costless substitute for high-priced iron ores in many blast furnaces situated within easy reach of such raw material. It has been, with but few exceptions, the practice in this country, based upon tradition rather than upon authority or European precedents, to waste this material on account of its high proportion of silicic and phosphoric acids, although known to contain more iron than most ores, and although also known to be sometimes applied to the blast furnace in greater or less quantities, without serious detriment to the iron, for specific purposes. While in use to a limited extent in the Hocking Valley and Hanging Rock iron regions of Ohio for several years, its use in Western Pennsylvania has only become general of late, under the exigencies of high prices and a short supply of ore. Especially has mill cinder largely entered into the stock of furnaces attached to rolling mills in and about Pittsburgh. Under such circumstances the cinder pig has been puddled on the premises, and the malleable iron produced has been unexpectedly good. Cautiously as at first mill cinder has been applied, it is evident that the temptation to use it freely is a strong one whenever the commercial rates for high-class ores are out of proportion to the general conditions of the iron trade, as sometimes happens in this country, especially as the free use of it is apparently justified by the quality of the iron produced from this cheap and abundant material. Indeed, the consumption of cinder pig has not been wholly confined to mills using up the production of furnaces belonging to the same plant. One furnace, at least, on the Ohio, at Covington, for several months has been making foundry pig from "all cinder." The iron has gone into the general trade.

It is probable that malleable iron of good quality can be made from the poorest cinder pig, but with what degree of economy will depend on the relative cost of good ores, of labor and of fuel. At works producing and puddling their own cinder pig, all evils of practice are encountered at the puddling stage of the manufacture. But it is doubtful whether the prejudice against the use of cinders, and the valid reasons against their indiscriminate application to the blast furnace, are not sufficiently strong to exclude from the general trade either forge or foundry-cinder pig without its effectual amelioration in the blast furnace itself, except possibly in the case of foundry iron for a few specific purpose, where excessive cold-shortness is not regarded as a serious objection, as when used for gas and water pipes, stove castings, &c. The recent improvements in the basic processes for the purification of crude iron point to the special adaptation of phosphoric pig for these particular processes, and the application of cinder pig *par excellence* in preference to purer and more costly iron. The results of the recent introduction of cinder into the stock of Pennsylvania furnaces running on forge iron have varied, as near as I can learn from personal inquiry, according to what appears to me to be the accidents of the several mixtures in different cases.

ANALYSES OF MILL CINDER.

	Tap cinder.			Reheating or flue cinder.	
	I.	II.	III.	IV.	V.
Silicic acid	13.81	30.00	21.58	29.60	24.51
Protoxide of iron	64.53	65.04	63.38	64.67	63.30
Sesquioxide of ir'n	8.73	.....	.....	.....	.....
Protoxide of manganese	0.36	1.60	trace	trace	trace
Metallic iron	.....	.....	7.12	2.35	6.80
Alumina	2.01	1.20	0.30	2.40	0.35
Magnesia	0.44	trace	1.50	trace	1.40
Lime	4.28	0.20	2.10	0.44	2.50
Phosphoric acid	4.37	1.24	3.20	0.54	0.83
Sulphuric acid	0.62	trace	.....	trace	.....
Total	98.15	99.28	99.18	100.00	99.69
Metallic iron	53.44	50.59	51.42	52.65	51.10
Phosphorus	1.91	0.54	1.40	0.23	.36
Sulphur	.....	.....	0.33	.....	.....

I. Rensselaer Mill, Troy, N. Y.—Tap cinder.
II. Ironton Rolling Mill, Ironton, Ohio.—Tap cinder.
III. Marietta Rolling Mill, Ironton, Ohio.—Tap cinder.
IV. Reheating (flue) cinder.—Same works.
V. Reheating (flue) cinder.—Same works.

The proportion of cinder being the same, the best results have been obtained with aluminous mixtures—*i. e.*, when used along with ores containing notable proportions of silicate of alumina, like clay ironstone, or Clinton fossil ore, or, still better, of uncombined alumina, as in Belfast (Irish) ores. This experience is in agreement with the best European practice. As both vary in acid properties to about the same degree, according to the relative proportion of silicic acid and ferrous oxide, the relative proportion of a mixture of both as a blast-furnace stock may practically be disregarded. The cinders, although varying in their proportions of silica, are as furnace stock all highly acid. They are also high in phosphoric acid from the oxidation of phosphorus in the process of puddling and from its consequent concentration. The two tendencies to be overcome in the use of mill cinders are, first, the production of a silicious metal through the reduction of an excess of silica and its passage in the metallic state into the pig; and, second, an excessive cold-shortness from excess of phosphorus, the same effect being likewise produced by excess of silicon. In producing malleable iron from cinder the phosphorus is sufficiently oxidized and purged off within the ordinary limits of the operation of puddling, and, therefore, without sensibly prolonging this process. Silicon, on the other hand, is eliminated in the same way, but not without retarding the operation, and consequent loss of iron and fuel. Hence the necessity of reducing the proportion of this element in the pig. If cinder from the puddling of cinder pig be used continuously, it will readily be seen that at works where this is done a deterioration of the cinder must be the result, by accumulation of phosphoric acid. Thus the proportion of phosphoric acid in the cinder dump will increase with the frequency that cinder is used over. In producing cinder pig for foundry purposes cinders should not be used more than once, unless care be taken to divert the excess of silica and phosphorus from the iron to the slag of the blast furnace. Where this is the aim, it becomes of the last importance to keep down the proportion of silicon in the pig, already cold-short from excess of phosphorus. That this can easily be done by various admixtures I shall presently show.

So far as I can learn, the practice has uniformly been in this country to neutralize the excessively acid quality of cinders by excess of limestone, while certain ores have been in favor for admixture. Such ores prove to be either red-short basic ores, like Lake Superior specular, or highly argillaceous ores, like clay ironstone from the coal measures. In Great Britain, where the utilization of mill cinders is well understood, an aluminous admixture is considered indispensable. Several clay ironstones are especially used for this purpose—fire-clay, ferriferous shale, and, *par excellence*, an aluminous ore from Belfast, Ireland—a hydrous brown hematite, containing 35 per cent. of free alumina, and not over 32 per cent. of metallic iron. This ochreous ore of alumina is very near the French beauxite, which is even richer in alumina. Belfast ore is well known in this country, it having been imported by several furnaces in Pennsylvania for the sake of its aluminous qualities, so deficient in most American magnetites. Chateaugay magnetic iron ore, from Clinton County, N. Y., a feldspathic type of this class of ore, doubtless owes its extraordinary fluxing properties to its large proportion of alumina, which is, of course, already combined with silica (monosilicate).

SILICIOUS IRON ORES.

Many of the most important and best-known iron ores of the United States low in phosphorus are high in uncombined silica, and hence have a tendency to excessive silicon in the pig. The following analyses of well-known Bessemer ores will illustrate this point:

	I.	II.	III.	IV.
Susquioxide of iron	50.13	55.60	42.09	43.37
Protoxide of iron	23.29	25.24	19.10	16.55
Protoxide of manganese	0.38	0.31	0.32	0.24
Silica	20.02	17.44	20.04	26.01
Alumina	4.22	1.09	7.90	3.25
Lime	1.28	0.53	7.87	3.02
Magnesia	0.85	0.12	2.46	7.56 ($CaCO_3$)
Sulphur	.....	trace	0.32	0.17
Phosphoric acid	.....	0.05	0.21	trace
Titanic acid	trace	.....	.....	.....
	100.17	100.38	100.31	100.17
Metallic iron	53.16	58.53	44.31	43.28

I. Crown Point Iron Company, New York, Hammond Mine Run of Mine.
II. Crown Point Iron Company, New York, Penfield Mine Run of Mine.
III. Mount Hope Mine, Washington County, N. Y.
IV. Port Ann Mine, Washington County, N. Y.
Jour. Iron and Steel Inst., 1874, p. 130.

ALUMINA AS A FLUX FOR SILICA AND LIME.

It is well known that a large proportion of lime in the blast-furnace charge is the most uniformly available means at hand for the diversion of sulphur from the iron to the cinder. But the tendency of an excess of lime in the blast furnace is to a refractory or difficult fusible cinder. Likewise, the most available means for preventing the reduction of silica in the use of an acid stock, like silicious ores or mill cinders, is the application of a large proportion of lime in the charge. It has long been generally observed that the admixture of aluminous iron ores, like clay ironstone, promotes the fusibility of basic slags; and that, with an aluminous mixture, a large proportion of lime may be charged when desirable, with the object of preventing the passage of silicon and sulphur into the iron. Thus Frémy obtained perfectly fused aluminates of lime with 80 parts of lime and 20 parts of alumina.

One of the most striking tendencies in American blast furnace practice is the use of an excess of lime, especially at the East, where the only aluminous ores generally in use are native clayey hematites. Limestone is too often, against the fusibility of cinder and contrary to economy, made to do the duty of much less proportions of alumina. The deficient slag-making properties of our richest ores are often mistakenly supplied with excess of lime, the best effect of which must sometimes be simply to complement the variety of bases requisite for a good cinder from the magnesian and aluminous impurities of the limestone itself, instead of more economically adding the same substances directly in the ore mixture. The consumption of fuel must be in some direct proportion to the basicity of the cinder beyond a certain degree when accomplished by limestone alone. The comparative qualities of magnetites are often estimated practically, if not by rule, according to their earthy, rather than by their metallic, units. Thus several ores of this species in the market enjoy special reputations for smelting properties, due in all such cases to the proportion and quality of their silicious and basic contents, or cinder-making properties. Calcareous or carbonated varieties of ore, like spathic magnetites and clay ironstone or siderite, having self-fluxing properties, are not at present under discussion.

It has been found that the English iron ores, producing iron with first-rate malleable properties, like Lowmoor, Blænavon and Staffordshire Gubbins, are those averaging 1 part of alumina to not over 2½ of silica.

It is these earthy constituents of ores, including magnesia, on which not only the slag-making properties of ores depend, but entering more or less into the metal, partially only in a reduced state, are in the course of manufacture given off in the form of cinder, the quality of which has a direct influence upon the formation of fiber, upon cohesion, or, in other words, upon the strength of the iron. The influence of sulphur and phosphorus in forge metal is comparatively unimportant. Millions of tons of second and third class specular iron ores, already mined and stocked in the dumps of Lake Superior mines as refuse, can be afforded cheap for shipment. These ores will prove acceptable enough as soon as effective and economical means are found for overcoming their acid properties arising from jaspery admixtures (silex). These ores vary from 50 to 60 per cent. of metallic iron. A cheap and available aluminous flux alone is required to bring this immense accumulation of really valuable ores into the market.

WESTCHESTER ALUMINOUS MAGNETITE AS A BLAST FURNACE FLUX.

In 1874 I called attention to a highly aluminous non-silicated magnetite occurring in Westchester County, New York, under the usual conditions of the magnetic ore beds of the New York and New Jersey highlands, as especially adapted for the blast furnace in admixture with silicious iron ores, mill cinders or sulphurous ores.*

Since then this deposit has proved to be of great magnitude, and to be so situated as to admit of this valuable ferro-aluminous and basic material being placed on board vessel at Peekskill, or on cars of the Hudson River Railroad, at the price of other iron ores in the market. The analyses of typical specimens given below exhibits its superiority as a material at once highly basic and ferruginous, and as the richest available source of uncombined alumina known, and at the same time as an iron ore but slightly below the standard of richness of well-known shipping ores.

From the table of analyses given below it will be seen that the Westchester material is a mixture of magnetic and anhydrous oxide of aluminum. Belfast ore and beauxite, on the other hand, consist essentially of hydrated oxide of aluminum, together with variable proportions of hydrous and anhydrous sesquioxide of iron.

Owing to the large percentages of water in these foreign aluminous ores, the Westchester material, weight for weight, has by far the greater number of available units. In the calcination of Belfast ore, or in the blast furnace, a shrinkage of about one-fifth takes place. In Lancashire and Cumberland, England, where argillaceous fluxes have long been applied along with the rich red hematites of these districts, the ocherous hydrate of alumina, known as Belfast ore, has come into use as a substitute for common clay shale, the object of such a mixture being to supplement the deficient slag-making properties of so rich an ore, as well as to saturate the uncombined silica (the percentage of which is from 5 to 7), and thus to bring up the mixture to the same composition as the best clay ironstone.

ANALYSES OF ALUMINOUS IRON ORES.

	Westchester Aluminous Magnetite (Anhydrous).						Foreign Ores (Hydrous).	
	I.	II.	III.	IV.	V.	VI.	Belfast Ore	Beauxite.
Protoxide of iron	.....	.....	45.86	.....	.....	.....	.....	.....
Sesquioxide of iron	.....	.....	21.14	18.49	17.92	.....	.....	.....
Bisulphide of iron	.....	.....	25.86	28.21	28.70	.....	.....	.....
Protoxide of manganese	.....	.....	2.63	.....	.....	.....	.....	.....
Alumina	.....	.....	0.55	.....	.....	.....	.....	.....
Lime	.....	.....	39.36	41.28	44.53	36.46	34.47	.....
Magnesia	.....	.....	0.46	.....	.....	.....	.....	.....
Phosphoric acid	.....	.....	7.18	.....	.....	.....	.....	.....
Silicic acid	.....	.....	0.22	.....	0.16	0.09	0.16	.....
Titanic acid	.....	.....	0.51	0.32	1.13	1.04	2.88	.....
Water	.....	.....	2.41	3.09	3.88	3.52	4.41	38.24
Metallic iron	34.44	35.82	34.54	34.13	.....	.....	1.17	.....
Phosphorus	0.09	.....	0.07	0.04	.....	.....	0.07	.....
Sulphur	1.40	.....	.....	.....	.....	.....	0.07	.....
	.....	.....	.....	34.03	.....	.....	34.59	.....
	.....	.....	.....	0.07	.....	.....	0.07	.....
	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	32.65	18.71
	.....	.....	.....	.....	.....	.....	8.39	.....
	.....	.....	.....	.....	.....	.....	23.06	.....
	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	46.65	.....
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I and II. Analyses by Professor C. F. Chandler, School of Mines, New York.
III, IV and V. Analyses by Professor T. M. Drown, Lafayette College, Easton, Pa.
VI. Average of preceding analyses.
Belfast ore, owner's circular.
Beauxite, Dr. Siemens.

Non-silicated aluminous ores, like the Westchester or Belfast ores, in which the alumina is in a free or uncombined state, are especially adapted to admixture as follows:

1. With silicious ores, like quartzose magnetites or silicious hematites of all varieties, to prevent the reduction of silica and the passage of silicium into the pig metal. Silicious iron ores may be brought to the same essential composition as the best clay ironstone or feldspathic magnetite, by the addition of such a proportion of alumina as will reduce the silica of the mixture to about 2½ parts to 1 of alumina. The addition of silicated alumina, like shale, clay or feldspathic magnetite, for the purpose of neutralizing excess of silica, defeats the production of a basic slag without excess of lime. 1. With free alumina it is practicable, even with excessively acid ores, to produce a slag between a monosilicate and a bisilicate. 2. The application of an excess of lime for the same purpose tends to a difficultly fusible cinder, slow working of furnace and a waste of fuel.

II. With mill cinders, for the same purpose and with the same effect. The advantage of an application of free alumina to a highly silicious stock is well explained in a commercial circular, dated Bayswater, London, 1865. In this circular it is shown that the result produced by the mixture of 4 tons of Blaenavon, Pontypool and Lowmoor clay ironstone, in equal parts, is in like manner accomplished by applying 1 ton of Belfast aluminous ore to 4 tons of the cinders, and that there is no difference in the proportion of alumina to silica, or in the quantities of sulphur and phosphorus.

III. With magnesian ores, like chloritic or hornblendic magnetites—*e. g.*, those of Northern New Jersey and Southern New York—to supplement their slag-making properties and promote fusibility of cinder, this being accomplished far more effectively and economically than with lime alone.

IV. With sulphurous ores or with sulphurous coal—to prevent the reduction of sulphates back to sulphides by retaining them in the slag. The action of alumina resembles that of lime, and in conjunction with lime performs desulphurization without excess of lime.

MIXTURES OF SILICIOUS IRON ORES AND MILL CINDERS WITH WESTCHESTER ALUMINOUS MAGNETITE.

	Iron.	Alumina.	Silica.	Magnesia.	Phosphorus.	Proportion of Alumina to Silica.
Five parts Crown Point (Hammond Mine) to one part Winchester ore	50.06	9.28	16.88	1.90	0.021	1 to 1.82
Five parts Crown Point (Penfield) to one part Westchester ore	54.54	7.44	14.73	1.39	0.021	1 to 1.98
Five parts Fort Ann magnetic iron ore to one part Westchester ore	42.80	9.847	21.67	1.10	0.066	1 to 2.25
Seven parts mill cinder (I), Rensselaer Rolling Mill, to one part Westchester ore	51.32	6.66	13.23	1.38	1.90	1 to 1.82
Three parts mill cinder (II), Ironton, Ohio, to one part Westchester ore	46.59	10.71	22.50	1.80	0.422	1 to 2.10

The difficult fusibility of a highly basic (calcareous) slag—such, for instance, as comes from an excess of lime in the case of a sulphurous stock, may be overcome by an addition of free alumina in the form of Belfast or Westchester ferroaluminous ores; or, still better, by replacing a portion of the lime with at least this equally effective and far more fusible absorbent of sulphur when applied in proper relation to silica.

* Read at the Lake Superior meeting of the American Institute of Mining Engineers by Dr. James P. Kimball Bethlehem, Pa.

* *Amer. Chem.* for March, 1874.

Special Notices.

TRUSTEES' SALE

OF THE

VULCAN WORKS,

Chattanooga, Tenn.,

NOVEMBER 10, 1880,

Consisting of the following machinery:

BAR AND NAIL PLATE MILL, GUIDE MILL, MUCK, TRAIN, HEATING AND PUDDLING FURNACES, FULL EQUIPMENT OF SPIKE AND BOLT MACHINERY, WITH ALL APPURTENANCES, BUILDINGS, REAL ESTATE, &c., &c., &c.

Also, Same Day,

THE VULCAN NAIL WORKS,

Consisting of 44 Machines, with all appurtenances, Buildings, Real Estate, &c. For full particulars, address

T. G. MONTAGUE,
Trustee Vulcan Works,
JAMES C. WARNER,
Trustee Vulcan Nail Works,
or, S. B. LOWE, Chattanooga, Tenn.

Second-Hand and New Machinists' Tools.

September 16, 1880.

One Lamson, Goodnow & Co. 2-spindle Profiling Machine.
One Engine Lathe, 90 in. s. x 20 ft. Ames, new.
One " " 92 in. x 20 ft., Seth Wilmont.
84 in. Boring Mill. A 1 order.
One Engine Lathe, 30 in. s. x 20 ft., good order.
One " " 30 in. s. x 16 ft. Wheeler, new.
One " " 30 in. s. x 12 ft. Ames, new.
One " " 28 in. s. x 27 ft. New, for shafting.
One " " 24 in. x 12 ft. New Haven, good order
One " " 24 in. x 12 ft. Ames, new.
One " " 24 in. x 10 ft. " "
One " " 20 in. x 10 ft. Fifield, new.
Two " " 20 in. x 8 ft. Ames, new.
One " " 18 in. x 8 ft. Star Tool Co.
One " " 16 in. x 6 ft. New Haven, good order
Two " " 16 in. s. x 7 ft. Ames, new.
Three " " 16 in. s. x 8 ft. " "
One " " 16 in. x 8 ft. Star Tool Co.
Two " " 15 in. x 6 ft. Flather, new.
One " " 15 in. x 6 ft. Star Tool Co.
One " " 13 in. x 5 ft. Gould.
One " " 13 in. s. x 4½ ft. Pond, not bk. g. or screw cutting.
One Hand Lathe, 20 in. s. x 8 ft.
Six " " 11, 14 and 16 in. s. x 4½ to 7 ft. bed.
One 16 in. stroke Shaper. Wm. Sellers & Co., A1.
Six 9 in. " Hewes & Phillips.
One 32 in. x 10 ft. Planer. Lathe & Morse.
One 30 in. x 10 ft. " Wheeler.
One 26 in. x 7 ft. " New Haven, new.
One 24 in. x 5 ft. " Moore & Wyman.
One 24 in. x 3 ft. 9 in. Planer, Windsor Mfg. Co.
Two 27 in. x 4 ft. 9 in. Planer. Windsor Mfg. Co.
One 36 in. Drill, bk. geared and self-feed. New Haven,
One 34 in. " Bk. Geared. [new.
One 24 in. " Putnam.
One 22 in. " Prentice.
Six 20 in. " new.
One Pratt & Whitney No. 0, 3-Spindle Drill.
One 6-Spindle Horizontal Drilling Machine.
One 4 Spindle Horizontal Drill.
Four Newell Punch Presses.
One No. 3 Wilder Punch Press. New. Geared.
Three No. 4 " " " "
One No. 6 " Shear Geared. "
One 10 h. p. Baxter Engine. Good as new.
Stephens & Boker Vises, A1 order, 3½ and 4 in.
Belting, Shafting, Pulleys and Miscellaneous Machinery.

E. P. BULLARD, 14 Dey St., New York,

GENERAL EASTERN AGENT FOR

Akron Iron Co.'s Hot Polished Shafting.

NOTICE.

To Consumers of Steam.

GEO. W. STORER, General Agent for the

Hancock Inspirator,

Has removed to

149 North Third St., Philadelphia,

and desires correspondence from buyers of

Steam Pumps, Governors, Injectors, &c.

Export Agency.

We are establishing a permanent Agency in Australia for the sale of American goods. Manufacturers desiring to introduce their goods to that market on favorable terms can have an opportunity of doing so by promptly addressing or calling on

ALFRED FIELD & CO.,
93 Chambers St., New York.

Wanted.

NOVELTIES OF MERIT FOR THE ENGLISH MARKET. Unequalled facilities for rapid and thorough introduction throughout Great Britain. Call on or address A. F. CONANT,

64 College Place, cor. Chambers St., New York.

WANTED.

A thorough, energetic and practical Mechanic and Draftsman, for Superintendent of Foundry and Machine works, employing 70 hands on Engine, Saw and Grist Mill, Plantation work, Jobbing and Repairs. State kind of work familiar with, pay, and all particulars. Address

GEO. R. LOMBARD & CO.,
Augusta, Ga.

Refer to Wm. Cooke, Machinery and Supplies, No. 6 Cortlandt St., New York.

Wanted.

A first-class FOUNDER and TWO KEEPERS, to start and work a Furnace, now being erected with all modern improvements, to make 40 tons of iron per day, in one of the most pleasant, healthy and cheapest places to live in the United States. Apply to GEO. W. LEWIS, Logan Iron and Steel Works, Lewistown, Penn., or to CHARLES L. OUDESLUYS & SON, Dealers in Minerals, 71 Exchange Place, Baltimore, Md.

FOR SALE.

A Manufacturing Business of Wrought Iron Goods, some thirty small staple hardware articles, as per price list; part machine and part hand made; profits, 35 to 45 per cent.; price, $3000 cash for stock on hand and fixtures, or would take a good mortgage on real estate for the entire amount, or sell part cash and part on time. Address, at owner's residence, G, 165 Prospect Place, Brooklyn, N. Y., for particulars.

FOR SALE.—Valuable Water Power and Buildings.—Rare Chance.—A Valuable Water Power, with 3 Turbine Wheels, 42, 5 and 21 in. respectively. Building 28x45 and 21x45, two stories and basement; also, other buildings. Never failing stream and plenty of water. Thirty minutes ride from New Haven. Terms easy. Address A. J. DOOLITTLE, Hamden, Conn.

SECOND-HAND and NEW TOOLS FOR SALE LOW.

September List No. 1.

Miscellaneous Second-Hand Tools.

All in Good Order, and will be sold very low

One Engine Lathe, 96 in. swing x 18 ft. bed.
Seven Engine Lathes, 18 in. swing x 7½ ft. bed, chair feed.
Two Wood-Turning Lathes.
One Speed Lathe.
One Polishing Lathe, 20 in. swing x 20 ft. bed.
One Polishing Lathe, 25 in. swing x 22 ft. bed.
Two Spinning Lathes.
One Upright Drill, 16 in.
One Bench Drill.
One Pulley Polishing Machine.
One Pointing Screw Machine.
Three Speed Lathes, 6 ft.
A lot of Wood Working Machinery.
Two Profiling Machines, Two Spindle.
Six Small Punching Presses.
One N. Y. Safety Steam Power Co., Upright.
15 H. P. Engine, and 20 H. P. Upright Boiler with all connections, &c.

NEW TOOLS, Very Low.

Five No. 2 Bolt Cutters, Wood & Lighte.

A complete set of Shafting & Pulley Lathes, new.

One 15-inch Shaping Machine.

Please specify which of the above tools you want and we will forward all particulars.

STEAM LAUNCH,

40 ft. x 7 ft.; draws 3 ft; Engine, 5½ x 9; Boilers, 32 x 48. Fitted with carpets, &c., for pleasure.

A Woodruff & Beach Beam Engine,

Low pressure, 42-inch cylinder, 84 inch stroke, with fly-wheel pulley 20 feet diameter, 36 inch face, and

Four Tubular Boilers,

60 inches in diameter, 20 feet long, and all connections practically as good as new.

For sale by

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade St.,

NEW YORK.

FOR SALE.

In Birmingham, Conn., a lively, growing manufacturing village, with two water powers, gas and water throughout the village, sewers now being introduced, population 15,000 within a radius of three miles, increase of fifty per cent. since last census, one of the best and longest established and the leading House Furnishing, Stove, Tinning, Plumbing, Steam and Gas Fitting businesses in that section. Address, as above, EDWARD LEWIS, JR.,
80 and 82 Main Street.

For Sale at a Bargain.

A Double Tool Post Planer, one of the best in the country. Table, 24½ ft. long; width between uprights, 10 ft. 3 in.; hight, 10 ft.; weight, nearly 80 tons; up and down feed; cross head raised and lowered by power; built by Woodruff & Beach, at a cost of $20,000.

One Lathe, 90-inch swing, 20 ft. bed, built by the Ames Mfg. Co. Has universal swivel tool post and cross feed, adapting it for boring and turning bevels or tapers. A substantial and first-class tool.

Address H. B. BEACH & SON,
Hartford, Conn.

To Let.

The whole or part of the finest building in Brooklyn; 75 x 100 feet, four stories high, and splendid high, dry cellar, with the best of light; only one block from the New York ferries, on a corner, near the depots of all the main trunk lines of railroads to the North and West.

The very best chance for any manufacturing, printing or publishing business near New York. Will be let with or without steam, which can furnish if required to 100 horse power. Will be let low to right parties. Address

BUILDING,
Brooklyn, E. D., P. O., New York.

For Sale.

A good Hardware and Agricultural Implement business in Southwestern Iowa. Village on C., B. & Q. R. R.; population, 1500; county seat; excellent schools; business extensive and profitable and constantly increasing. Reason for selling, owner wishes to retire from business. Address

E. O. McNAIR,
Warsaw, N. Y.

TO BE SOLD AT A GREAT BARGAIN. The entire stock of Stoves, Ranges and Housefurnishing Hardware at Nos. 36 and 38 Warren Street, Syracuse, N. Y. Anybody desirous of engaging in the Stove business will here find a rare opportunity of starting the trade in one of the best locations in the city. The store, which can be leased on easy terms for any number of years, has a frontage of 30 feet and 140 feet in length, and provided with ample shop-room facilities. It is an old stand, being used as a stove store for a great many years. For particulars, inquire of GEO. B. LEONARD,
Cashier First National Bank, Syracuse, N. Y.

Wanted.

A Traveler who is well acquainted with the leading Wholesale Hardware merchants of the West. One who has had experience can address, with references, stating salary expected.

TRAVELER, Box 216,
Office of *The Iron Age*, 83 Reade St., New York.

For Sale.

TWO VALUABLE PATENTS.

1st. For Improvement in Roller Skates.
2d. For Improvement in Carpenters' Chisels.

Terms to suit purchasers. For details, address

CHAS. E. L. JELLEFFE,
90 Nassau St., New York.

Wanted.

SHEARER—A number one man, and competent to shear steel shapes. Address

SHEARER, care of Jos. D. Weeks,

Office of *The Iron Age*, 77 4th Ave., Pittsburgh, Pa.

WANTED.

A competent SUPERINTENDENT for a Car Building Shop in the West. Must be capable of taking charge of the whole organization, including every department; one who has had experience in contract building preferred. A liberal salary will be paid, or an interest based on the product of the works. Address, giving references and full particulars, SUPERINTENDENT, care of Jos. D. Weeks, Office of *The Iron Age*, 77 4th Ave, Pittsburgh, Pa.

A LARGE ASSORTMENT OF NEW AND SECOND-HAND MACHINERY.

STEAM ENGINE MACHINERY.

One Delamater Sugar-house Engine 26 in. x 48 in.
Five Horizontal Engines, new, 9 in. x 16 in.
Four " " 8 in. x 12 in.
One Portable Engine, 5 horse power.
One Horizontal Engine, 11 in. x 18 in., Whitehall & Hampsen [ferty.
One Horizontal Engine, 15½ in. x 30 in., Todd & Rafone Upright Engine, 7½ in. x 10 in.
Two Horizontal Return Tubular Boilers, 100 h. p. each.
One 25 h. p. Horizontal Engine.
One Horizontal Engine, 200 h. p.
One Boiler, 5 ft. x 15 ft. 8 3 in. Tubes.
Two " 5 ft. x 14½ ft 100 2¾-in. Tubes.

MACHINISTS' TOOLS.

One Vertical Boring Mill, bore from 26 to 90 inches.
One Turn Table and Boring Mill, 11 feet between columns.
Two Slabbing Machines.
One Merrill Compressed Air Hammer, Hotchkiss Patent.
One Punch and Shears combined, will punch 1¼-inch hole in 1-inch iron in the center 30 in.
One large Shears, will cut ¾ iron any size.
Two Ensley Drills.
One New Haven Mach. Co. Drill, will bore in center 60 in.
One New Haven Mach. Co. Drill, will bore in center 30 in.
7900 lbs. ¼ Plate Iron, for safes.
One Lathe, 24 in. x 12 ft.
One Lathe, 32 in. x 20 ft. bed.
One " 28 in. x 20 ft. "
One " 16 in. x 7 ft. "
One Pattern Makers' Lathe.
One Planer, 42 in. x 16 ft.
One Crank Planer, 18 in. x 2 ft.
One Travis' Boring Machine.
Eighteen Drilling Machines.
One Root Blower.
One Bogardus Mill, No. 5.
Four Jacketed Kettles, with Stirrers.
One Large Power Punch for bridge work.
One 3000 ton Hydraulic Press and Pump.
One Dudgeon Beam Punch.
One Upright Drill, to the center of 61 in.
One " " " " " " 42 in.
Three Vacuum Tanks, 6 ft. x 12 ft.
One Hand Punch smaller.
One hundred Vises.

PUMPS.

One Knowles Special Pump, No. 7.
One Guild & Garrison Steam Pump, No. 3.
One Woodward Steam Pump, No. 1.
Six Hardick Steam Pumps, from No. 0 to No. 4.

J. GRAY'S MACHINERY DEPOT,

37 Dey Street, New York, U. S. A.

Wanted.

By a corporation in Massachusetts manufacturing Hardware and Cutlery, a practical man as BUSINESS MANAGER, who will invest $3000 to $10,000; 8 per cent. guaranteed on investment. To the right party this is a rare opening. Business long established; will bear investigation. Address

MANAGER,
Office of *The Iron Age*, 83 Reade St., New York.

For Sale.

HARDWARE.—The controlling interest or the whole of a Jobbing Hardware House, already established and doing a profitable business; located in one of the large Western cities. For further particulars, address C. A.,

Office of *The Iron Age*, 83 Reade St., New York.

WANTED.—A situation by a married man, no family, as Janitor or Caretaker of Offices or Buildings, or would do Collecting. Understands the use of carpenters' tools, and is willing to make himself useful to any landlord wanting the same. Salary moderate; best of reference furnished. Address R. N. C., Box 2738, New York Post Office.

ONE OR TWO TRAVELERS ABOUT STARTING OUT can add a very desirable specialty to their line; liberal commission. Address

HARDWARE SPECIALTY,
Office of *The Iron Age*, 83 Reade St., N. Y.

FOR SALE.

A works completely equipped for the manufacture of Carriage Axles. Is well located in relation to coal and iron, also very accessible to market.

Address E. P. BULLARD,
14 Dey St., New York.

HAMMACHER & DELIUS,

Hamburg, Germany,

62 Alter Wall,

Solicit correspondence with American Manufacturers and Inventors in regard to representation in European countries.

Wanted.

Three or four first-class Traveling Salesmen, to travel in the West for a large Iron and Hardware establishment. Must be men of good business ability, and have experience in that line of business on the road. Address

SALESMAN, care of Jos. D. Weeks,
Office of *The Iron Age*, 77 4th ave., Pittsburgh, Pa

For Sale.

Cold Blast Charcoal Furnace.

First-class in every respect and ready for immediate blast. Stone stack, ample water power; 2000 cords season'd wood on hand. Charcoal can be had at 4½ cents per bushel at furnace. For further particulars address

ROBERT W. MONROE,
Kingwood, W. V.

THOSE WISHING TO BUY OR HAVE FOR SALE SECOND-HAND

PRESSES or DROP HAMMERS

will please communicate with

N. C. STILES,
Middletown, Conn.

FOR SALE.

A stock of Hardware in one of the best towns of its size in the State. Business established in 1840. The death of George H. Humphreys, of the firm of Rowan and Humphreys, necessitates the closing out of our stock. This is a rare opportunity for any party wanting to engage in trade. Our trade for the past twenty years has been very prosperous. Address

JEROME ROWAN, Batavia, N. Y.

For Sale.

In Los Angeles, California, an interest in Wholesale and Retail Hardware, Stoves, Iron Pipe and Manufacturing Tin and Sheet Iron Ware. A rare opportunity for a good business in a climate unsurpassed in the world. For particulars, address

B. F. COULTER.

Special Notices.

TRADE SALES.

BISSELL & WELLES, Auctioneers,
TUESDAY and WEDNESDAY, SEPT. 21st and 22d,
At 83 Chambers and 65 Reade Sts., New York.

TUESDAY, Sept. 21.—Large sale of Shelf Hardware, Edge Tools, Hammers, Hatchets, Strap and T Hinges, Butts; also, 1600 doz. Wide Awake and Colver Files, asst. kinds; 50 doz. Axes; 3000 lbs. Horse Nails, 7s and 8s; 100 doz. D. H. & L. H. Shovels, and other goods too numerous to mention.

WEDNESDAY, Sept. 22—Special sale of Housefurnishing Goods; 35 cases Brushes; 300 lots of Tinned and Enameled Ware, &c., &c.

Important Sale.

BISSELL & WELLES, Auctioneers.

WEDNESDAY and THURSDAY, Sept. 29 and 30, at 10 o'clock,

At 83 Chambers & 65 Reade Sts., N. Y.,

By order of the American Screw Co., Mass. Screw Co. and the Philadelphia Screw Co., about 80,000 grs. Continental, Pacific and New York Co.'s Flat Head Wood Screws, seconds. Also, by order of the Cutlery Association, 12,000 doz. Table Knives and Forks; a desirable line of Carvers and Butcher Knives, seconds; also, a desirable line of first quality Table Knives and Forks, Carvers, Solid Steel Plated Knives (12 oz. plate), Pocket Cutlery, &c., &c.

Persons who desire lists of the sizes of Screws to be sold will be furnished them on application to the Auctioneers.

FOR SALE.

A first-class Hardware Store, situated in a thriving town in Pennsylvania, with surrounding country thickly settled. Satisfactory reason for selling. Address J. R.,

Office of *The Iron Age*, No. 83 Reade St., N. Y.

FOR SALE.

The Best Retail Hardware Stock and Stand in Kansas City.

Is doing a good business.

PRESENT STOCK ABOUT $20,000.

Such an opportunity as this, for a couple of active, hard-working young men, with $20,000 or $30,000 capital, is seldom offered. Upon such goods as have advanced extravagantly, we will make such discounts from the present market rates that no one need hesitate about buying the stock from fear of a decline in prices. Address

J. E. FORBES & CO.,
Kansas City, Mo.

THE

Wood & Light Machine Co. Patterns

OF THE FOLLOWING TOOLS ARE FOR SALE AT VERY LOW PRICES:

Engine Lathes from 13 inch to 100 inch swing.
Driving Wheel Lathe, Double Heads, 84 inch swing, and Wheel Quartering Attachment.
Patent Shafting Lathes, 20 inch, 24 inch and 28 inch swing.
Pulley Lathes, 36 inch and 42 inch swing.
Hand Lathes from 12 inch to 20 inch swing.
Chucking and Boring Lathe, 20 inch, 24 inch and 28 inch swing.
Upright Drills from 16 inch to 60 inch swing.
Traverse Drills, 28 inch swing.
Planers, to plane from 24 inches square to 72 inches square.
Shaping Machines from 8 inch to 16 inch stroke.
Slotting Machine, 12 inch stroke, 52 inch swing.
Combined Shaping and Slotting Machine.
Slabbing Machines, three sizes.
Milling Machines, two sizes.
Milling Machines, Double Arms and Spindles.
Profiling Machine, two Spindles.
Boiler Plate Planer.
Quartering Machine for Locomotive Wheels.
Cutting off and Centering Machine, ¾ to 2½ inch.
Cutting off and Centering Machine, ¾ to 4 inch.
Cutting off and Centering Machine, 1 to 5 inch.

The above Patterns are for sale in one lot or separately, and finished work from these Patterns will be taken in payment, if desired.

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade Sts.,

NEW YORK.

JOHN E. SWAN & BROTHERS, IRON MERCHANTS,

Glasgow and Middlesbrough,

Exporters of all brands of

Scotch & English Pig Iron.

c. f. i. to America and or f. o. b. British ports.

Old Iron Rails, Puddled Bars AND MANUFACTURED IRON.

LAMBERSON'S

PRICE BOOKS.

Full Leather, $7.50. Half Leather, $6.50.
Pocket Edition, Full Leather, $3.50.
DISCOUNT Bolt List, $1.50.
Screw List, 50 cents.
Leigh's Discount Book, 50 cents.

Address all orders to *Pope & Stevens*, General Agents, 90 Chambers Street, N. Y.

For sale at publisher's prices by Wm. Blair & Co., Chicago; A. F. Shapleigh & Co., St. Louis; C. B. James, Detroit.

The Sherman Process Co.

9 Pemberton Square, Boston, Mass.,

Issue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces.

The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working See page 17 of *The Iron Age* of Oct. 25th 1877.

For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas.

Address HARDWARE,
Box 166, Salina, Kansas.

Sanderson Bros. Steel Co.

A limited number of shares for sale by

EDWARD FRITH & SON,
241 Pearl street, New York.

Special Notices.

To Iron Manufacturers

FOR SALE.

The ROLLING AND PUDDLING MILLS of the late Hudson River Iron Co., at Poughkeepsie, New York. This property is well situated on the Hudson River and New York Central and Hudson River Railroad, and is in good condition for immediate occupancy. It contains all the machinery necessary for the manufacture of Merchant Iron, Rail and Bolt Spikes, Bolts, &c. Parties in search of this kind of property are invited to examine, and for other particulars to address

W. S. JOHNSTON, Trustee,
Poughkeepsie, N. Y.

To Railroad Engineers, Importers and Others.

DAVID OWEN,

Inspector of Steel and Iron Rails,

Merthyr Tydfil, England,

Undertakes the inspection of Steel and Iron Rails, Permanent Way Materials, &c., &c., in England, Belgium and Germany. Thoroughly practical, of many years' experience. Can give very best of references from chief railroad engineers, merchants and others who have employed me to inspect their railroad materials during manufacture and delivery for the last 10 years.

Correspondence solicited. Instructions by mail or cable punctually attended to.

For Sale.

48-in. Bement Car Wheel Borer.
6-ft. Slotter, 4 ft. table, 16 in. stroke, weight 8 tons.
12 in. x 6 ft. Engine Lathe. Sellers'.
26 in. x 10 ft. Engine Lathe. N. Y. S. Engine Co.
Three old-style Bolt Cutters, one open dies.
Nos. 1, 5, 7 Pulsometers. No. 2 Prall Pump.
2-ton Chain Blocks, double length chain.
No. 6 Sturtevant Exhaust Fan and Counter Shaft.
2-in. Pipe Cutter and Counter Shaft. Morris, T. & Co
Vertical Engines and Boilers, 3 to 20 horse power.
Horizontal Engines and Boilers, 4 to 30 h. power.
Ingersol Rock Drill and 50 ft. of Hose.
Hoisting Machines, stationary and portable.

A. G. BROOKS & WINEBRENER,
261 North Third St., Philadelphia.

ILLUSTRATED CATALOGUES

of my Patent

Bit Brace Wrench

are now ready. This tool possesses every advantage of the ordinary Bit Brace, **and will also turn with rapidity Nuts and Bolts from ¼ to 1¼ inches.**

Q. S. BACKUS,
102 Chambers St., New York.

FOR SALE,

Job Lots and Bankrupt Stocks Hardware.

Great bargains offered to the trade.

A. W. WHEELER,

141 Lake St., Chicago, Ill.

FOR SALE.

Steam Engine, 6 x 15, with 25-horse-power boiler, feed pump and heater, nearly new and in good order. Two (2) second-hand "Peck" Drop Lifters, not geared; will raise hammers of 350 lbs. weight each. Second-hand sheet metal or poppet drop, 16 in. die space, good order.

BEECHER & PECK,
Lock Box 122, New Haven, Conn.

A TRAVELER, who has an established trade with Stove and Hardware manufacturers, would sell on commission a line of goods or supplies in demand by these trades. Address

COMMISSION, Box 15,
Office of *The Iron Age*, 83 Reade St., New York.

For Sale.

FINE GRAY IRON FOUNDRY, in the best city in Connecticut. A rare chance for a live man. Terms easy. For particulars, address

P. O. BOX **2063,**
New York City.

For Sale.

A stock of General Hardware, with dwelling, if desired. Autumn trade will be large. The banner county of Minnesota. Crops are heavy; the opportunity No. 1.

Address J. S. WHEELER.
Luverne, Rock Co., Minn.

Notice to Consumers of Fine Light and Medium-Weight Gray Iron Castings.

NORTH BROTHERS have leased the Foundry, N. W. cor. Twenty-third and Race Streets, Philadelphia, and solicit correspondence with the trade.

FOR SALE.

A one-half interest in stock and fixtures of a retail Hardware business having A No. 1 trade, carrying a stock of general Hardware and Housefurnishing goods, Stoves, Tinware and Agricultural Implements. Main store on line of railroad; branch store at a small inland town 6 miles distant. Present stock about $10,000. One of the best chances in Southern Michigan for a person wishing to engage in the Hardware trade. Address,

G. F. MURRAY, Reading, Mich.

To Capitalists and Mill Men.

Parties now controlling one of the best and most promising rolling mills in the Central West are desirous of adding to their capital and management. They offer portions of their capital stock for sale to acceptable parties. For particulars, address JOHN BROOKS,

Care C. & H. V. and C. & T. Genl. Ticket Office,
Columbus, Ohio.

CHARCOAL. An expert in the distillation of wood and the manufacture of Acetic Acid and Wood Alcohol, desires to make an arrangement with some charcoal iron maker to make charcoal for him, and at the same time utilize the wood products which are wasted in the ordinary process of charcoal burning. Address WOOD,

Office of *The Iron Age*, 83 Reade St., New York.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, September 15, 1880.

During the past week the financial markets have not been especially active, and since the Maine returns were received values have declined and business in shares is quiet. There seems to be a widespread feeling in financial circles that any change in the government would be unfavorable to the best interests of the country, and this feeling leads a great many to predict results, in the the event of such a change, which they cannot seriously believe are likely to happen.

The importations of specie and bullion at this port during the week ending September 10 amount to $4,357,134, including $4,232,193 gold and $124,941 silver. Since the 1st of January the importations will reach $21,954,814, consisting of $18,185,394 gold, $3,768,341 silver, and $1097 brass and copper coins.

Government bonds have shown slight signs of weakening and prices are not quite firm. The decline since the Maine news was received is only one or two points, but it is felt. The decline in 4 per cents was ¼ of 1%. State bonds were quiet and firm. Railroad mortgages are all lower, for the same reason that has affected governments. It is scarcely to be expected that these effects will be more than temporary, but in election times Wall street is very sensitive to the popular feeling. We give below the closing quotations of governments.

In the stock market the week opened with a bouyant feeling and closed unsettled, with prices from ½ to 2¼ % off. We give below the closing quotations of active stocks.

The following is a comparison of the averages of the New York banks for the past two weeks:

	Sept. 4.	Sept. 11.	Comparison.
Loans	$311,942,800	$313,716,200	Inc. $1,773,400
Specie	65,434,700	66,340,300	Inc. 905,600
Legal t'nd'rs.	14,541,400	13,948,200	Dec. 593,200
Tot. reserve.	79,976,100	80,288,500	Inc. 312,400
Deposits	297,186,800	298,350,500	Inc. 1,163,700
Reserve required	74,296,700	74,587,625	Inc. 290,925
Surplus	5,679,400	5,700,875	Inc. 21,475
Circulation	19,342,300	19,353,600	Inc. 11,300

The foreign trade movements for the week are shown in the following tables:

IMPORTS

For the week ended September 11:

	1878.	1879.	1880.
Dry goods	$2,002,241	$2,560,571	$3,184,775
General mdse.	3,085,246	5,033,246	5,482,084
Total for week	$5,083,487	$7,593,817	$8,666,859
Prev. reported	192,915,743	209,909,550	337,308,982
Since Jan. 1	$198,001,230	$217,503,367	$345,975,841

Included in the imports of general merchandise for the week were articles valued as follows:

	Quantity.	Value.
Anvils	105	$987
Brass goods	52	7,197
Bronzes	30	7,196
Chains and anchors	29	1,954
Copper	..	345
Cutlery	161	49,419
Pins	4	571
Gas fixtures	1	287
Guns	69	11,989
Hardware	16	696
Iron, hoop, tons	260	10,759
Iron, pig, tons	5,503	129,446
Iron, sheet, tons	15	1,770
Railroad bars	10,115	87,192
Iron cotton ties	16,215	15,403
Iron ore, tons	4,632	12,194
Iron, other, tons	3,703	110,746
Metal goods	159	22,050
Nails	1	83
Needles	32	9,741
Nickel	18	6,094
Old metal	..	1,445
Platina	1	3,685
Percussion caps	13	2,555
Saddlery	9	2,390
Steel	7,592	59,191
Spelter	55,172	2,932
Silverware	5	680
Tin, boxes	26,937	135,288
Tin, bbls	12	967
Tin, 4,273 slabs; 259,488 lbs.	..	43,359
Wire	118	2,301
Zinc	11,040	2,888

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended September 14:

	1878.	1879.	1880.
For the week	$8,087,836	$6,217,157	$8,718,379
Prev. reported	230,948,918	221,061,748	274,965,431
Since Jan. 1	$239,036,754	$227,278,905	$283,683,810

EXPORTS OF SPECIE.

For week ended September 11:

Total for the week	$127,624
Previously reported	5,413,377
Total since January 1, 1880	$5,541,001
Same time in 1879	12,277,641
Same time in 1878	10,419,663
Same time in 1877	22,431,446
Same time in 1876	40,268,445
Same time in 1875	64,592,829
Same time in 1874	41,839,443
Same time in 1873	40,926,206
Same time in 1872	57,252,820

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. 6's 1880 registered	102⅛	102⅜
U. S. 6's 1880 coupon	102⅛	102⅜
U. S. 6's 1881 registered	104⅛	104⅜
U. S. 6's 1881 coupon	104⅛	104⅜
U. S. 5's 1881 registered	102¼	102¼
U. S. 5's 1881 coupon	102¼	102¼
U. S. 4½'s 1891 registered	110⅛	110⅛
U. S. 4½'s 1891 coupon	110⅛	110⅛
U. S. 4's 1907 registered	108⅞	109⅛
U. S. 4's 1907 coupon	109⅞	110⅛
U. S. Currency 6's 1895	125	—
U. S. Currency 6s 1896	125	—
U. S. Currency 6s 1897	125	—
U. S. Currency 6s 1898	125	—
U. S. Currency 6s 1899	125	—

The following were the closing quotations of active shares:

	Bid.	Asked.
American District Telegraph	75	75½
Atlantic and Pacific Telegraph	43	43¼
Alton and Terre Haute	22	22½
" " Pref.	75¼	76
Burlington and Quincy	134	135
Chicago and Alton	116½	117
" " " Pref.	125	130
Bur., Cedar Rapids & North	65	66
Clev., Col., Cin. and Indianapolis	70½	71¼
C. C. and I. C.	19⅛	19¼
Little Pittsburgh	3	3¼
Canada Southern	60	63
Chicago, St. Louis and New Orleans	38½	39½
Colorado Coal and Iron	24⅜	25
Central Pacific	73¾	74
Climax	1½	1¾
Central Arizona	7	7⅛
Caribou	1⅜	1¼
Central Iowa	30	32½
Chesapeake and Ohio	19¾	20
" " 1st Pref.	25	26
" " 2d Pref.	20¼	22¼
Denver and Rio Grande	73	73¼
Delaware, Lack. and Western	90¼	90⅜
Delaware & Hudson	85⅛	85⅛
Erie	33¾	33⅞
" Pref.	66	66½
Erie and Western	33½	33¼
Excelsior Mining	—	10
Express—Adams	117¾	118
" Wells, Fargo & Co.	110	111
" American	59	59½
" United States	48½	50
Homestake	35	—
Hannibal and St. Joseph	38⅞	39
" " Pref.	80½	81
Indiana, Bloom. and Western	27	30
Illinois Central	112⅜	112½
Iron Mountain	55½	55⅝
Kansas and Texas	33⅞	34⅛
Keokuk and Des Moines	10½	11
" " Pref.	—	27½
La Platte	5¾	5½
Louisville and Nashville	141	143
Lake Shore	108¼	108⅜
Marietta and Cincinnati Pref.	5½	6
" " 2d Pref.	4	5
Manhattan Elevated	31	31¼
Michigan Central	94⅞	95
Morris and Essex	110	110⅝
Mobile and Ohio	22¾	23
Montauk Gas	73¼	74
Metropolitan Elevated	91	94
New York Elevated	110½	112
*New York Central	129¼	130¾
Nashville and Chattanooga	64½	66
New Jersey Central	76¼	76⅝
Northwest	103⅜	103⅞
" Pref.	124⅝	124⅝
Northern Pacific	30½	30⅞
" Pref.	55⅜	55⅝
New Central Coal	27	29
Ohio Central	21	22⅜
Ontario and Western	23⅜	23⅞
Ohio	35⅜	35½
Ontario Silver	32	32⅛
Ohio Preferred	75	76½
Pacific Mail	40½	40¾
Peo., Dec. and Evans	24½	26
Pittsburgh, Titusville & Buffalo	31½	31½
Quicksilver	11	13
" Pref.	—	36
Reading	31¼	31½
Rock Island	117	117⅜
St. Paul	91½	91⅝
" Pref.	111	112
Standard	28½	29
San Francisco	—	36
" " Pref.	46¼	46½
" " 1st Pref.	76	77
St. Paul and Omaha	42	42½
" " Pref.	82½	82½
Silver Cliff	3	3½
Sutro Tunnel	1½	1¾
Union Pacific	92½	92¾
Western Union Telegraph	103⅝	103¾
Wabash	35⅜	35¼
" Pref.	65¾	66

* Ex-dividend.

MINING STOCKS.

The following are the closing quotations of mining stocks:

	Bid.	Asked.
Amie	63	64
Bell Isle	55	60
Bechtel	81	1.00
Buckeye	24	25
Bulwer	1.80	2.00
Bodie	4.80	5⅛
Calaveras	34	35
Caledonia	—	3.00
California	2.40	2.50
Climax	1.55	1.60
Consolidated Virginia	3.30	3.40
Chrysolite	4.95	5.00
Dahlonega	11	12
Eureka C.	16.00	—
Findley	33	36
Great Eastern	55	57
Gold Placer	75	80
Goodshaw	98	1.00
Granville	10	12
Great Mountain	3.55	3.70
Hukill	1.00	1.70
Independence	—	90
Lacrosse	28	30
Lucerne	14	15
L. Chief	1.35	1.45
Little Pitts	3.00	3.25
Mar. Pref.	1.30	—
Moose	36	38
North Star	50	—
Rappahan	28	29
S. Bodie	11	13
Sutro	1.55	1.70
Tioga	85	—

GENERAL HARDWARE.

The demand for General Hardware continues active and prices are remarkably steady. During the week no changes of importance in values have been announced.

The Peck, Stow & Wilcox Co. have just issued, under date of 1st inst., a discount sheet to apply to their illustrated catalogue of July, 1880. The changes in prices have already been noticed in our columns. In this connection we would say that the Peck, Stow & Wilcox Company are now prepared to furnish their customers with a copy of the catalogue to which reference is made. The announcement of this catalogue by us some weeks ago was premature, as our notice of the book was made from an advanced copy—a fact that we were not aware of at the time.

The Atlantic States Nail Association held a meeting in this city to-day, which was adjourned without making any change in prices or terms. The demand for Nails is active and the tone of the market steady and firm. We quote: 10d. to 60d., $3.15 @ $3.25, net, according to quantity.

Wm. Wilcox Mfg. Co., Middletown, Conn., on the 9th instant advanced their list prices of the following numbers of Brass Padlocks: No. 112 to $6.50; No. 113, $7; No. 114, $8.50.

Wm. E. Uptegrove, proprietor of the extensive wood yard, Nos. 470 to 476 East Eleventh street, and saw mill, Nos. 465 to 475 East Tenth street, makes a specialty of Bracket Woods. In a circular to the trade he says: "I have made this branch of the wood trade a specialty for the past few years, giving much time and study to its requirements, and especially to the production of White Holly, which, from its peculiar nature, renders the production of fine wood difficult. Appreciating that my efforts in this line have been substantially recognized by the trade, I have arranged for a larger cutting, I believe, than ever before undertaken, and having secured an outlet for the more imperfect grades of this wood, I shall offer to the Bracket Wood trade only the choicest and most carefully selected stock, not only in clearness, soundness and size, but also perfection in seasoning, color, &c." His stock of White Holly and Black Walnut—the kinds in most demand—is large. The wood is furnished 1-16th, ⅛, 3-16ths and ¼ inch thick. His list of other woods contains Mahogany, Birdseye Maple, Cherry, Poplar, Oak and Ash, Rosewood, Cocobola, Satinwood, Tulip, Ebony, Amaranth, Red Cedar and Spanish Cedar. We invite attention to his advertisement on page 11.

C. E. Jennings & Co., No. 96 Chambers street, illustrate in an advertisement on the 27th page an Iron Bench Level and Adjustable Spirit Level, Plumb and Inclinometer, manufactured by Davis Level and Tool Company, of Springfield, Mass., for whom they are agents. In a circular, under date of 1st inst., Davis Level and Tool Company say: "We beg leave to inform you that we have this day appointed Messrs. C. E. Jennings & Co., 96 Chambers street, New York, as our agents, and they now have our entire stock and the exclusive sale of our goods throughout the country. And we would request that you kindly forward all future orders to the above-named firm direct, where they will be thankfully received and promptly dispatched."

The Union File Works, at Baltimore, have recently taken possession of the new premises erected for their business at 309, 311 and 313 North street. Mr. J. H. Shaal, who is well known to the trade, is superintendent of the works, and informs us that their trade is rapidly increasing, taxing their utmost capacity to meet the demand. They say: "We have taken advantage of all late improvements in the manufacture of Files, yet retaining partly the old process, to insure all advantages claimed for the old and celebrated brands of English Files. Our tempering is done by a peculiar process, securing the greatest degree of hardness and sharpness of tooth." Attention is invited to their advertisement on the 8th page.

Bissell & Welles announce, in advertisement on the opposite page, that they will sell by auction, on Tuesday and Wednesday, Sept. 21 and 22, a large quantity of Shelf Hardware, &c.; and on Wednesday and Thursday, Sept. 29 and 30, by order of several Screw manufacturers, a large lot of second quality Wood Screws; and by order of the Cutlery Association, over 12,000 dozen Table Knives and Forks, Carvers, &c. Further particulars will be found in the advertisement.

Thomas J. Bradley, President of the New York Knife Company, died of paralysis on Sunday last at his residence in Walden, N. Y. The funeral took place to-day. Mr. Bradley was one of the pioneers in the Spring Cutlery trade in this country, and the goods manufactured under his management have done much to remove the prejudice which for a long time existed in the public mind against American Pocket Cutlery. He was 60 years of age at the time of his death.

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

LONDON, Wednesday, September 15, 1880.

Scotch Pig.—There is a steady, fair demand, but prices are weak. Six more of the suspended furnaces resumed work during the week, making the number now in blast 46. We quote as follows:

Gartsherrie	61/
Coltness	60/6
Glengarnock	57/6
Eglinton	54/6

Compared with the prices cabled last Wednesday a decline is shown of 1/ on Gartsherrie, Glengarnock and Eglinton, and 1/6 on Coltness.

Manufactured Iron.—A fair amount of business is doing, but prices are not strong. We quote nominally Best Staffordshire Bars, £8.

Steel Rails.—Demand is light, and the amount of business transpiring is small. We quote Ordinary Sections, £6. 10/.

Iron Rails.—Business light. We quote Welsh, £5. 5/.

Old Rails.—With a light demand, prices are nominal. Old Ts are still quoted £4.

Scrap.—We quote Wrought, £3. 17/6.

IRON.

American Pig.—The Iron market is quiet this week, buyers continuing to hold off, but it is believed that stocks in consumers' hands are not excessive, and that a more active demand than exists at present cannot long be delayed, as consumption is more than usually heavy for this season. We hear of sales of 500 tons No. 1 Foundry—a Lehigh brand—on private terms, and quote Foundry No. 1, $26 @ $27; Foundry No. 2, $22.50 @ $23.50; Gray Forge, $20.50 @ $21.50.

Scotch Pig.—Sales on private terms are reported of 550 tons Glengarnock, 200 tons Gartsherrie and 100 tons Eglinton. The market lacks animation. We quote: Eglinton, $21.50 @ $22; Coltness, $24 @ $25; Glengarnock, $23.50 @ $24, and Gartsherrie, $23 @ $24.

Rails.—Sales are reported of 1500 tons Steel Rails, at a price equal to $60, at tidewater, by the Lackawanna Iron and Coal Company. In Iron Rails no new business is reported, but the inquiry is active, and a good deal of business seems to be pending. We continue to quote Iron Rails, at tidewater, $47 @ $50, according to section, and Steel $60 @ $65, according to time of delivery.

Old Rails.—Since our last writing about 2000 tons of Old Rails have changed hands at from $26 to $27.50 per ton, ex ship. The market has since gained in strength, and $27 @ $28, from store, represents holders' views to-day.

Scrap.—In this department of the Iron business there is very little doing. We hear of a sale of 200 tons No. 1 Wrought on private terms. We quote No. 1 Wrought, from yard, $28, and ex ship, $27.

The offices of the Thomas Iron Company and Lackawanna Iron and Coal Company, in this city, have been removed from No. 52 to No. 18 Wall street.

METALS.

Copper.—Sales for the week have been confined to 100,000 pounds Lake Superior at 18¼¢ @ 18⅜¢, but nothing more can be had now below 19¢. Second-hand lots seem to have been all disposed of, and the consumptive demand is satisfactory. The Sault Ste. Marie Canal generally closes toward the middle of November, when shipments cease. From England Best Selected is cabled £67 and Chili Bars £61. From Chili late news has been telegraphed. It seems that the mediation of the United States has been accepted. Mail advices from London, dated September 4, are as follows: "The better tone in this market is attributable to the advices from Chili showing the charters for the month of August as only 1700 tons, of which 1300 tons were chartered during the last fortnight, and which show the charter for the first half of the month to be 400 tons. All previous advices which have been received with regard to this charter were, therefore, inaccurate. Yesterday £61. 5/ @ £61 was officially quoted, and at the close £60. 17/6 was reported to have been taken, and to-day down to £60. 10/ is quoted. The statistics published on September 1 must be reckoned satisfactory, for they show a good decrease in the total visible stock, which now amounts to 63,192 tons, against 65,001 tons on August 1, or a decrease of 1809 tons, and it may be interesting to note that the stock has not been so low as at the present time since May last, when the statistics published on the 1st of that month showed the stock to be 528 tons less than it is now." Manufactures remain as under: Bottoms, 31¢; Braziers, according to size, 28¢ @ 34¢; Circles, 31¢ @ 34¢; Segment Sheets, 31¢; Fire-box Sheets, 28¢; Sheathing, 26¢; and Bolt Copper, 28¢.

Tin.—Our market has remained inactive; besides the ordinary jobbing lots, about 200 tons have changed hands on the spot and afloat. London at first recovered with Straits Tin to £84. 10/, but to-day's cable quotes £82. 10/, while Singapore keeps steady at $26.50 per picul, with but small stocks, there being a good demand there, principally for China. Much will depend, so far as the value of Tin is concerned, upon the development of the fall trade here and in Europe. If a lively business springs up between now and the end of October, the speculators for a rise on both sides of the Atlantic will, in all likelihood, again take hold of Tin vigorously; if, on the contrary, the fall trade should remain considerably below expectations, they may not have the courage to take charge of it, in view of the ampler supplies which Europe will be attracting from now forward. On this we believe the immediate future of the metal hinges. Meanwhile, it cannot be denied that the fall trade is opening well on this side, and there is every indication that it will be very active in Europe, unless something unforeseen should occur not now perceptible. What we say about Tin and its future will apply to the other metals as well, and we may possibly be on the eve of much livelier times in most of them, if not in all. It is, indeed, as we view it at this juncture, less a question of statistics than of opinion, and the latter is ruled by the general aspect of business; if the latter promises uncommonly well, the entire metal trade will revive. We quote at the close, large lots: Straits, 20¢ @ 20¼¢; Australian, 19¾¢ @ 20¼¢; and Billiton, 19½¢ @ 19¾¢. "London, September 4.—Since our last report this market has assumed a declining tendency, and prices have been almost daily quoted lower. Yesterday the price stood at £85. 10/ @ £83. 15/, and to-day steady at £84. 5/ @ £84. 2/6. It seems probable that the advanced prices recently ruling have attracted shipments from Australia, as the statistics show them to be 1175 tons for last month, but only 175 tons from the Straits. The total shipments from Australia for the twelve months ending August 31 last were 8096 tons, against 7095 tons for the previous twelve months, and those from the Straits for similar periods 1640 tons against 3992 tons, together showing a reduction of 1351 tons. The deliveries last month were 1404 tons, against 1299 tons in July and 1895 tons in August, 1879. The total visible stock on the 31st ult. was 14,244 tons, against 13,494 tons on July 31, or an increase of 750 tons." *Tin Plates* have been rather firmer, but quotations are unaltered and we repeat them, per box, ordinary brands, large lines: Charcoal Bright, $6.25; ditto Ternes, $5.75 @ $5.87½; Coke Tin, $5.30 @ $5.37½; and ditto Ternes, $5.25. In England, the cable reports that Coke Tin is easier, but not down to prices here.

Lead.—Of Common Domestic some 500 tons sold in lots at 4.80¢ @ 4⅞¢; the bulk on hand is firmly held at 4.90¢, but small lots would be procurable, probably, at 4⅞¢, while the price generally bid is 4¾¢ @ 4.80¢. The White Lead manufacturers are understood to be doing a brisk trade, yet they hold back for the moment; nothing has transpired, therefore, in Refined for corroding purposes; the finest thereof is held at 5¾¢. Manufactures are quoted as follows: Sheet Lead, 7¢; Lead Pipe, 6½¢; Tin-lined ditto, 15¢, and Block Tin Pipe, 40¢.

Spelter and Zinc.—No resumption of activity can as yet be announced in Common Domestic Spelter, which we continue to quote nominally 5¢ @ 5¼¢, and Silesian, 5⅞¢ @ 6¢. Sheet Zinc is worth 7¼¢ @ 7⅜¢.

Antimony.—A moderate trade has been transacting; we quote as heretofore, Cookson, 16½¢.

COAL.

Trade for the past few days has been somewhat quiet, but there is a very general good feeling, because almost every one has orders ahead. Many merchants have already on their books orders enough to keep them going for some time in the future. These are mostly at the old prices, and, though now and then a person is met who pretends to have some taken at circular rates, these are few and far between. The companies are reported as full of orders taken before the advance, and as selling nothing at circular rates. We hear some complaints from the shipping points of the accumulation of stocks. They largely arise from a scarcity of vessels. Coal is, however, coming down with great rapidity. The last week reported shows an output of no less than 660,000 tons. The total for the year is some 14,000,000, or, say, about 2,500,000 less than last year. The leading topic of conversation in the trade during the past few days has been the scarcity of vessels. For Eastern points, and notably Boston, nothing is offered, and though the last rates paid were about $1.15, yet those who have Coal to ship would be glad to give $1.25 and more for suitable vessels. We hear of much delay at the shipping points on this account. In fact, there is hardly an office in Trinity Building that has not orders for the East waiting for vessels. The greater portion of all the business done at the present time is in domestic Coal, and we hear that the yards in and about the city are still busy. Prices are unchanged, and we quote the same as last week: Lump, Lehigh, $5 @ $5.40; Free-burning, $4 @ $4.30; Grate, $4 @ $4.50; Egg, Lehigh, $4.40 @ $4.50; Free-burning, $4.10 @ $4.25; Stove, Lehigh, $4.45; Free-burning, $4.35. The price of Free-burning Stove is probably much nearer $4.25 than $4.35, though the latter is the quoted figure. Chestnut is about $4; one or two kinds are quoted at $4.10 or $4.15.

OLD METALS, PAPER STOCK, &c.

The demand for Old Metals and Paper stock continues active. We have but a slight advance to note, the market generally having an upward tendency.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	₩ lb.	$0.16	@ $0.16½
Copper Bottoms	"	.14	@ .14½
Yellow Metal	"	.08½	@ .09
Brass, heavy	"	.11	@ .11½
Brass, light	"	.09	@ .09½
Composition, heavy	"	.14	@ .14½
Lead, heavy	"	.03½	@ .04
Tea Lead	"	.03½	@ .03¾
Zinc	"	.03½	@ .03¾
Pewter, No. 1	"	.11	@ .12
Pewter, No. 2	"	.08	@ .09
Wrought Iron	₩ ton	20.00	@ 22.50
Light do	"	13.00	@ 14.00
Stove Plate	"	12.00	@ 13.00
Machinery do	"	17.00	@ .....
Grate Bars	"	7.50	@ 9.00

The prices current for Rags, &c., are as follows:

Canvas, Linen	₩ lb.	3½c. @ .....
White Cotton, New	"	3½c. @ .....
" No. 2	"	2½c. @ .....
White, No. 1	"	3½c. @ 4c.
" No. 2	"	2½c. @ .....
Seconds	"	1½c. @ 2¼c.
Soft Woolens	"	10 c. @ .....
Mixed Rags	"	2 c. @ 3 c.
Gunny Bagging	"	1¾c. @ .....
Jute Butts	"	2¾c. @ .....
Kentucky Bagging	"	3 c. @ .....
Book Stock	"	2½c. @ .....
Newspapers	"	2 c. @ .....
Waste Paper and Scraps	"	1 c. @ .....
Kentucky Bale Rope	"	4 c. @ .....

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending September 14, 1880:

Hardware.

Boker Herrman & Co.
Cutlery, guns and Hdw., pkgs., 106
Burkinshaw W. C. & Son,
Cases, 3
Carey Samuel,
Millstones, 265
Grindstones, cks., 29
Field A. & Co.
Cases, 28
Folsom H. & D.
Cases, 4
Graeff Cutlery Co.
Mds., pkgs., 5
Hartley & Graham,
Arms, cs., 13
Guns, pkgs., 5
Harmer, Hays & Co.
Case, 1
Howard Bros. & Read,
Cases, 2
Livingstone Wm. F.
Millstones, 993
Grindstones, cks., 14
Lalance & Grosjean,
Pkgs., 20
McCoy & Sanders,
Mds., pkgs., 8
Merchants' Dis. Co.
Cases, 3
Pim, Forwood & Co.
Cases, 23
Pkgs., 6
Sellers W. B.
Cutlery, cs., 2
Venning S. V.
Boxes, 2
Witte John G. & Bros.
Knives cs., 16
Order,
Files, csks., 7
Pkgs., 136
Cases, 7
Cask, 1
Cutlery, csks., 2

Iron.

Brown Bros. & Co.
Wire, coils, 235
Bank of New York,
Hoops, bdls., 14,985
Bloomfield J. C.
Mchy., cs., 1
Balling H.
Bars, 317
Baring Bros. & Co.
Wire rods, coils, 481
Bartram Bros.
Scrap, tons, 5
Carraras W. J.
Scrap, hhds., 10
Drexel, Morgan & Co.
Ore, tons, 451
Bessemer, tons, 500
Hopkins E. T.
Bars, 883
Jansen J. A. & Co.
Scrap rails, tons, 740
Lee James & Co.
Pig, tons, 200
Lundberg G.
Bars, 3867
Gray pig, ingots, 2616
Mayer Bros. & Co.
Scrap rails, kilos., 236,000
Morton, Bliss & Co.
Scrap rails, 210
Milliken & Smith,
Wire, bdls., 941
Merchants' Dis. Co.
Tubes, 225
Merchants' Dis. Co.
Cask, 1
Nevada Bank,
Pig, tons, 200
Perkins, Livingstone & Co.
Spiegel, tons, 399
Simons J. H. & Co.
Ingots, 65
Shier E.
Mchy., cs., 4
Taylor Jas.
Mchy., pkgs., 39
Upson, Walton & Co.
Wire rope, coil, 5
Williamson J. & Co.
Pig, tons, 200
Order,
Rods, lots, 325
Mchy., cs., 19
Scrap rails, tons, 1315
Spiegel, tons, 1210
Spiegel, kilos., 355,150
Scrap rails, 2481
Scrap, pcs. 6978,
Sheet, pkgs., 15
Swedish bars, 2568
Bars, 4641
Hoops, bdls., 3996
Bundles, 240
Scrap, tons, 100
Scrap, kilos., 102,792
Pig, tons, 950
Cast, cs., 400

Steel.

Brown W.
Bundles, 243
Case, 1
Mosher H. M.
Case, 1
Order,
Bundles, 50
Rails, 812

Metals.

Baring Bros. & Co.
Tin, slabs, 988
Byrne Jos. & Co.
Tin plates, bxs., 1702
Carr W. B. & Co.
Tin plates, bxs., 945
Cort N. L. & Co.
Boxes, 1100
Carraras W. J.
Scrap copper, pkgs., 25
Scrap copper, pcs., 107
Dickerson, Van Dusen & Co.
Antimony, csks., 34
Tin plates, bxs., 1763
Elwell Jas. W.
Hhds., 1
Phelps, Dodge & Co.
Tin plates, bxs., 4350
Mds., pkgs., 5
Antimony, csks., 25
Pim, Forwood & Co.
Tin plates, boxes, 20
Stevenson, Pearsen & Co.
Cases, 125
Windmuller L. & Roelker.
Spelter, plates, 2961
Order,
Tin plates, bxs., 3672
Casks, 7
Cases, 6
Bundles, 26
Pkgs., 89
Tin, slabs, 1073

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending Sept, 14, 1880:

Ste tin.

	Quan.	Val.
Ptlm.,gals.	251,579	$23,490

Lyngor.

Ptlm., gals.	114,716	10,324

Danzig.

Ptlm., gals.	201,550	17,650

Christiansand.

Ptlm., gals.	186,836	18,799

Elsinore.

Ptlm., gals.	936,060	88,725

Danish West Indies.

Ptlm., gals.	8,013	1,033
Nails, kegs	18	71
Glassware	14	161
Mf. iron, pgs.	26	47
Tinware, cs.	2	43
Oil tanks	3	41
Mach'y, pkge.	1	150
Hdw., pkgs.	31	272
Cartridges, cs.	1	68

Bremen.

Ptlm., gals.	757,307	71,918
Sew. ma., cs.	3	230
S'dpaper, pkgs.	17	444
Ag. imp., cs.	1	135
Iron goods, cs.	1	150
Wheels	52	200
Hdw., pkgs.	18	395
Tinware, pkgs	2	55

Hamburg.

Mf. iron, pkgs	13	307
Mach'y, cs.	32	4,930
Pumps, pkge.	1	44
Copper, cks.	39	7,000
Ptlm., gals.	422,617	39,382
Sew. ma., cs.	406	6,100
Clocks, boxes	41	577
Hdw., cs.	144	3,603
Pitdware, cs.	2	84
Belting, cs.	4	1,409
Lub. oil, bbls.	60	575

Rotterdam.

Ptlm., gals	58,072	54,150

Dutch West Indies.

Ptlm., gals.	350	51

Antwerp.

Ptlm., gals.	703,529	58,468
Telp. fixt., cs.	18	750

Hull.

Ag. imp., pgs.	34	370
Clocks, boxes	27	540
Ptlm., gals.	89,382	8,326
Mf. iron, pkgs	12	485
Hdw., cs.	17	462
Pitdware, cs.	1	189
Bells, cs.	20	120

Canada.

Glassware, cs.	8	108
Lamps, pkgs.	2	100

British North American Colonies.

Pig iron, tons	15	450
Glassware, cs.	8	40
Mf. iron, pkgs.	6	75
Ptlm., gals.	8,490	1,297

British Guiana.

Ptlm., gals.	3,300	382

Havre.

Ptlm., gals.	208,854	15,011
Sew. ma., cs.	126	1,500
Lub. oil, bbls.	100	460
Mach'y, cs.	3	200

Bordeaux.

Ptlm., gals.	385,869	15,100

United States of Colombia.

Nails, kegs	119	589
Iron safe	1	50
Ptlm., gals.	7,803	1,248
Mf. iron, pkgs	398	3,946
Zinc, casks	9	430
Sew. ma., cs.	295	6,591
Ag. imp., pgs	46	2,121
Pitdware, pkgs	14	1,164
Arms, cs.	8	2,156
Velocip'a, cs.	2	31
Belting, cs.	3	161
Brake fix., pkg	1	70
Cartridges, cs.	5	169
Plumb. mt., bxs	5	45
Iron boats	2	14,000
Hdw., cs.	268	8,452
Pumps, pkgs.	3	114
Nails, cs.	1	31
Iron, pkgs.	58	367
Clocks, cs.	19	327
Tinware, pkgs	23	476
Mach'y, pkgs.	357	15,545
Glasswe., pkg.	50	743
Cutlery, cs.	298	5,573
Mch. oil, gals.	110	88
Revolvers, cs.	14	1,098
Cars	25	11,200
Tin, bxs.	5	33
Car mtl., pkg.	41	1,830
Photo. mtl., cs	2	131
Telp. mtl., cs.	2	676
Brass g'ds, cs.	2	235

London.

Ag. imp., pgs.	82	6,180
Scales, pkgs.	24	279
Clocks, bxs.	508	12,035
Mach'y, pgs.	586	9,427
Pumps, pkgs.	13	890
Hdw., cs.	144	6,294
Mf. iron, pkgs.	84	1,744
Mach'y oil, gls	30	11
Grindstones, cs	12	84
Lub. oil, bbls	2,100	25,050
Glassw'e cs.	3	64
Crge. mt., pkgs	153	1,985
Iron safe	1	300
Plmb. mtl, pkg	1	124
Iron gds., cs.	1	175
Oil stones, cs.	6	76
Sew. ma., cs.	45	1,300
Ptlm., gals.	333,552	29,186
Tin, bxs	13	364
Tinware, cs.	4	150
Pitdware, cs.	1	140
Belting, cs.	1	120

Glasgow.

Belting, cs.	3	894
Tin, boxes	10	356
Hdw., cs.	67	1,854
Lamps, pkgs.	19	239
Lub. oil, bbls.	134	2,082
Sew. ma., cs.	32	853
Mf. iron, pkgs	22	562

Venezuela.

	Quan.	Val.
Hdw., pgs.	27	$533
Mf. iron, pkgs	19	231
Sew. ma., cs.	2	29
Ptlm., gals.	11,850	1,484
Clocks, bxs.	3	74

Brasil.

Tinware, cs.	21	2,074
Cutlery, cs.	62	2,667
Cartridges, cs	17	359
Mf. iron, pkgs	185	1,409
En. insts., cs.	4	994
Vel'ipedes, cs.	6	480
Belting, cs	5	973
Tubing, bbls.	1	38
Pitdware, cs.	3	465
Lamp gds., pk	9	491
Rifles, cs.	3	323
Pumps, pkgs.	6	217
Mach'y, pkgs.	356	11,079
Hdw., cs.	367	5,013
Revolvers, cs.	1	470
Sew. ma., cs.	72	1,627
Ag. imp., pge.	1	14
Ptlm., gals.	40,708	5,614
Nails, kegs	156	534
Iron safes	2	261
Irons, cs.	4	24

Liverpool.

Pitdware., cs.	9	582
Ag. imp., pkgs	30	2,551
Tin, boxes	10	102
Lamp gds., pk.	25	1,923
Tel. mtl., cs.	8	350
Pumps, pkgs.	2	75
Pistols, case	1	200
Hdw., cs.	102	6,341
Machy., cs.	161	8,416
Lub. oils, bbls	23	419
Iron, bdls.	1,184	11,840
Mf. iron, pgs.	7	333
Rifles, cs.	1	50

French West Indies.

Carriages	2	375
Ptlm., gals.	6,000	780

Bilbao.

Ptlm., gals.	271,380	29,623

Barcelona.

Sew. ma., cs.	311	3,787
Hdw., pgs.	46	344
Pitdware, cs.	5	293
Glassware, cs	1	24
Mf. iron, pkgs	18	278
Ptlm., gals.	1,400	339

Cadiz.

Pitd. ware, cs.	1	20
Hdw., cs.	20	446
Pumps, pkgs.	2	29

Canary Islands.

Ptlm., gals.	16,000	2,000

Port Said.

Ptlm., gals.	129,000	15,480

Cuba.

Shoe matl, cs.	2	50
Pumps, pkgs.	1	35
Hardw., pkgs.	241	4,329
Tinware, pkgs	10	241
RR. mtl., pkgs	393	2,427
Grindstones	50	65
Ag. imp., pkgs	9	485
Nails, kegs	238	876
Revolvers	4	27
Meters, cs.	11	300
Zinc, casks	2	69
Iron safe, cs.	1	536
Plmb. mtl., cs	1	42
Ptlm., gals.	15,300	2,342
Glasswre., pkg	28	310
Scales, pkgs.	145	1,623
Mach'y, pkgs.	219	9,226
Mf. iron, pkgs	860	3,650
Lamp gds., pg	41	1,157
Sew. ma., cs.	254	3,900
Fire engine	1	350
Wire cloth, cs.	1	112

China.

Glasswre., pgs	9	164
Carriages	3	546
Brass g'ds, cs.	6	372
Coal, tons	196	865
Ptlm., gals.	230,000	28,750
Mach'y, pkge.	1	150

Hayti.

Glasswre., cs.	14	189
Ptlm., gals.	4122	551
Hdw., cs.	8	196
Barrows	24	34
Nails, kegs	74	241
Zinc, casks	2	100

Mexico.

Hdw., cs.	183	4,613
Pumps	7	140
Ag. imp., pgs.	20	775
Nails, kegs	737	2,560
Tacks, cs.	101	1,038
Tel. mtl., pkgs	5	285
Instrmnts., cs	2	181
Revolvers, cs.	12	6,819
Rifles, cs.	22	6,530
Nails, cs.	31	282
Shot, pkgs.	11	180
Mf. iron, pkgs	508	5,740
Ptlm., gals.	34,695	4,056
Sew. ma., cs.	230	3,594
Mach'y, pkgs.	108	11,201
Belting, pkgs.	4	265
Clocks, boxes	17	461
Sndpaper., pg	9	454
Cutlery, cs.	162	3,486
Cartridges, cs	1617	5,216
Carbines, cs.	30	2,690
Arms, cs.	4	456
Tin, boxes	2	64
Cars	10	6,853
Zinc, casks	4	86
Copper, cs.	1	46
Pistols, cs.	5	1,297
Pitdware, cs.	3	182
Lamp gds., pg	17	652
Steel, cs.	2	231
Iron, pkgs.	4	81
Tinware, cs.	6	168
Grindstns., pg	57	84

British West Indies.

Hdw., cs.	108	915
Saddlery, cs.	8	113
Mf. iron, pkgs	19	132
Ag. imp., pkg	17	171
Ptlm., gals.	13,339	1,799
Lamp gds., pg	8	79
Nails, kegs	201	766
Cge. mtl., pkgs	10	124
Glasswre., cs.	24	279
Sew. ma., cs.	2	40
Mach'y, cs.	4	77
Y metal, cs.	2	136

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, September 14, 1880.

Pig Iron.—The market continues dull and prices weak without being quotably lower. Buyers appear to be quite indifferent about placing orders, and at the moment a slight shrinkage in values seems imminent. Sellers have difficulty in finding a market for round lots and business appears to be entirely of a hand-to-mouth character. The leading producers are well up, however, and in the meantime have not found it necessary to make any changes in asking prices. Others who have recently started, or who have no orders on their books and are less favorably situated, are quoting lower rates, without making much progress in sales. This, of course, must eventually influence prices of all descriptions, and it is not likely that there will be much activity until prices are definitely established. So long as the market is in its present condition buyers will hold off, unwilling to pay the price asked for standard brands and afraid to take others, although quoted at relatively much lower figures. A more active movement is looked for as soon as deliveries on old contracts are completed, many of which, it is said, will expire during the current month. In some cases, however, it will make little difference to the market; the same parties will continue taking the same iron, at a price in keeping with the general tone of the trade. It is very probable, however, that there will be a reduction of at least $1 per ton from late nominal quotations. The majority of sales on which deliveries are now being made were entered in July at $1 @ $2 per ton below the quotations current during the past six or eight weeks, and it seems tolerably clear that consumers will not, in the present state of the market, be willing to renew contracts at any advance on July prices. There is no falling off in consumption, however, and deliveries are called for with a good deal of urgency, so that there is little danger of accumulation, and the hesitation among buyers is due more to uncertainty as to values than to shrinkage in requirements. Some parties attribute the apathy among buyers to the uncertainty in regard to the Presidential election. Others think that there is a pressure to unload foreign Iron, and that the low prices mentioned in connection therewith have unsettled values of all descriptions. We cannot learn that there have been any sales of foreign Iron, except in small lots, although bids have been solicited with a good deal of urgency, and it is believed that purchases could now be made at considerably lower rates than were asked recently. Bessemer Iron (foreign) has been sold during the week to the extent of nearly 20,000 tons, all at a cost of something over $28 at tide. Charcoal Iron sold at $35 @ $40; No. 1 Foundry, $25 @ $27; No. 2 Foundry, $22.50 @ $24; Gray Forge, $20.50 @ $22.50. Scotch Iron, nominal at $22 @ $23 for Eglinton and $24 @ $25 for Gartsherrie.

Blooms.—The market is steady, and sales during the week have been on the following basis, viz.: Cold-Blast Charcoal Blooms, $70 @ $72 per ton of 2,464 lbs.; Run out Anthracite, $60; Sunken Scrap Blooms, $55 per ton of 2240 lbs.; and Northern Ore Blooms, $50.

Muck Bars.—The market has been quiet during the week, and only a few sales of small lots have been made at about $40 here. Holders ask $39 @ $40 at mill, but buyers do not respond freely.

Structural Iron.—There has been only a moderate inquiry, and the amount of orders entered during the week not important. Manufacturers are quite crowded with work, however, and find it difficult to make deliveries as promptly as desired. Prices are steady, and may be quoted same as last week, viz.: Angles, 2.7¢; Beams, 3.1¢; Channels and Tees, 3.25¢.

Plate and Tank Iron.—The market has been quiet during the week, and sales have not been of special importance. The mills are all amply supplied with orders, however, and there is very little pressure to sell. The demand, on the whole, may be regarded as in excess of production, and it would be a matter of considerable difficulty to place heavy orders, unless for delivery late in the year. Several of the leading mills are declining orders for the present, and with new inquiries for large lots the outlook is very encouraging. We quote, as fair average prices, as follows: Tank Iron, 3.2¢; C. No. 1, 3.5¢; C. H. No 1, 3.75¢; Flange Iron, 4¼¢ @ 5¢; Fire-Box, 5¼¢ @ 6¢.

Sheet Iron.—There is no change to note. Business continues good, and the mills are being run to their utmost capacity to meet the demand. Prices are steady and unchanged, and may be quoted as follows:

Common Sheet, No. 26 to 28	4¼¢
Common Sheet, No. 22 to 25	4½¢
Common Sheet, No. 16 to 21	4¾¢
Best Refined ¼¢ @ ½¢ advance on the above.	
Best Bloom Sheets, No. 26 to 28	7¼¢
Best Bloom Sheets, No. 22 to 25	7 ¢
Best Bloom Sheets, No. 16 to 21	6¾¢
Common Red Plates, 3-16 to 16	3.4¢
Blue Annealed, 3-16 to 16	3.5¢
Best Bloom Galvanized, discount	25 %
Second quality, discount	35 %

Bar Iron.—There is no change to report. Business is active, consumption large and prices fairly steady. We have not heard of any specially large orders being taken during the week, but everybody seems to be buying a little, which, on the whole, makes a considerable business. The leading concerns have still a good many orders on hand, so that at present they are not sellers to any extent. At current quotations, however, there is no difficulty in placing orders, the tendency being rather in favor of buyers, who appear to expect a little shading for good-sized lots. We have not heard of this being done so far, and all transactions during the week have been on the basis of 2.4¢ @ 2.5¢. There is nothing to warrant the expectation of any deviation from these rates. The margin for profit is exceedingly small, and, as consumption is believed to be equal to the increased production and accumulation of stocks not probable, there is no apparent reason for either decline or advance. In the meantime, the market may be considered quiet and steady at 2.4¢ @ 2.5¢. There is some inquiry for Skelp Iron, which is held at 2.65¢, and no disposition to shade prices.

Steel Rails.—There is no change of importance; business prospects are of a most encouraging character, and the only difficulty is to meet the demand promptly. Consumption for the coming year is estimated by competent authorities at nearly a million tons, upward of one-third of which has already been taken. Sales during the week have been on the basis of $62.50 @ $65 for early delivery, and about $60 for the more deferred. The transaction referred to in our last, involving about 50,000 tons, has been definitely closed, the greater portion going to mills on the line of the Pennsylvania Railway. Another lot of 3000 tons, rolled from foreign Blooms, has been closed at about $65, and several smaller lots at similar rates.

Iron Rails.—There is a more active inquiry, and prices appear to be firmly maintained. Most of the mills are fully employed and not in a condition to accept orders for early delivery, and are afraid to contract too far ahead. Although we have not heard of any actual sales during the week, holders appear to have more confidence in values, and are asking slightly higher prices, without any disposition to make concessions. For 56s, $47 is said to be the inside rate; $48 for 35s, $50 for 25s and $52 for 16s, with sales of small lots, chiefly light sections, at the rates above quoted.

Old Rails.—A somewhat better feeling is reported to-day and holders are a shade stronger in their asking rates. Small lots have been sold during the week at rates ranging from $26 @ $26.50, but as these are now out of the way, holders are now asking full prices and appear to be firm in their quotations. The weakness during the past two weeks was due to heavy arrivals, some of which were placed on the market for what they would bring. These are now generally out of the way, and as but comparatively few are afloat from abroad, holders have greater confidence in values. The improvement, however, is more in feeling than in actual business, and there are no definite indications as yet that buyers will meet the advance: in the meantime we quote sales at $26 @ $26.50, with $27 @ $28 asked for lots in store, and one or two lots ex ship at about $26.50.

Railway Supplies.—Spikes are quoted at $2.75; Fish Plates and Splice Bars, $2.40 @ $2.50; Track Bolts, $3.75 @ $4.75.

Scrap Iron.—There is still an active demand, and desirable lots are readily taken at $20 @ $21 for Machinery, and $27 @ $29 for Wrought.

Nails.—Stocks are a good deal reduced, and a steady demand keeps prices firm at $3.25, less the usual trade discount.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., Sept. 14, 1880.

One of the chief events of the past week was the opening of the Pittsburgh Exposition. The attendance has been large and increasing and the display very creditable, although the very department that here in Pittsburgh should be full to overflowing makes an exceedingly poor show. We refer to Machinery Hall. The display of machinery is exceedingly meager—the poorest, we believe, at any time yet; but where the fault lies we cannot say, although we do not believe the Exposition managers can be held responsible. Pittsburgh should make a very full display in the department in question, and people from abroad will no doubt be much disappointed.

Pig Iron.—There has been an increased business as compared with the preceding week, and no doubt the demand will be better the coming week than it has been during the past one, as the consumption is large. As consumers generally have been buying very sparingly for a month or more, it is evident that they have been drawing on their stocks, and these in some instances are pretty well depleted and will have to be renewed, and that, too, before long. The tone of the market, however, is not as strong as it was a month ago, owing largely to the lull to which reference has been made, and then it is said by some commission men that there are increased offerings from the anthracite regions, with now and again an attempt to work off some of the foreign article in bond at the seaboard. There is no decline, however, nor is there likely to be, in view of the fact that Pig Iron is lower here, relatively, than at any other point East or West, and, so far as we can learn, there is no disposition on the part of furnacemen to make any concessions; on the contrary, some of them are refusing to sell except at full market price. We occasionally hear of an offer to sell at a very low price, but the article offered, when close inquiry is made, is found to be poor, and some of it would be dear almost at any price. Standard brands are not in large supply, and holders of these manifest no uneasiness, as they will command ready sale and good figures when the poor qualities can scarcely be sold at any price. Pig Iron, like everything else, is going on its merits; hence, while some kinds of Forge are being offered as low as $20, others are held at $27 @ $28. When the demand, as is the case now, is for actual consumption, and the buyers are consumers, knowing the difference between good and bad, quality is an important element in the market; when speculators are the main operators, as was the case during the "boom," it does not make so much difference, as many of them know nothing about quality. We are cognizant of a sale of 100 tons Neutral Forge having been made yesterday at $20.50, whereas standard brands of same grade are held at $22.50 @ $23; Red-short, $24 @ $25 for Cinder Mixture, and $27 @ $28 for all-ore ditto. We can report a sample lot of Bessemer at $28, 4 months. Sales of No. 2 Hanging Rock Charcoal Foundry at $29, 4 months, and Cold Blast at $40, cash.

Manufactured Iron.—Activity continues to prevail. The mills are all busy, some of them working up to their full capacity, and prices are maintained. Merchant Bars, 2.25¢ rates, 60 days, 2 % off for cash; Grooved Skelp Iron, 2.35¢ @ 2.50¢; Sheet, 3.90¢ @ 4¢ for No. 24; Plate and Tank Iron, 3.25¢ @ 3.50¢. The Sheet mills are unusually busy; all behind with their orders, and the demand for Tank and Plate Iron is unprecedented. It is next to impossible to place an order for the latter for early delivery, as the Standard Oil Company are buying the most of their Iron in England. Business in Hoop Iron is somewhat curtailed, although the mills appear to have about all they can do. The manufacture of Cotton Ties has also been very much curtailed here from the same cause.

Nails.—There has been very little change in the position of the Nail market since the date of our last report. Business, while a little more active, is backward for the season, and no special activity is looked for until the spring trade opens. While various causes are assigned for this unsatisfactory condition, the chief one lies in the fact that there are too many Nail machines, and the consumption has been considerably diminished during the past year or two. It is thought, however, that there will be a largely increased consumption next year, in view of the heavy emigration westward, which will necessitate a great many improvements. No change in prices—$3, 60 days, with an abatement of 10¢ per keg on car-load lots and 2 % off for cash.

Wrought Iron Pipe.—There is nothing new to report in this department of the Iron trade. The demand continues active, mills are all very busy, and prices are firm, but unchanged. Discount on Gas, Water and Steam Pipe, 60 @ 65 %; on Boiler Tubes, 40 %. Oil Well Casing, 75¢, net; ditto Tubing, 20¢, net.

Railway Supplies.—No recent sales of Steel Rails reported; mills are sold so far ahead that they are refusing to make any additional contracts. Railway Spikes are quoted at 2.65¢ @ 2.75¢, 30 days, inside figure for round lots. Fish Bars, 2.25¢ @ 2.35¢—some manufacturers quote as high as 2.50¢; Track Bolts, 3½¢ @ 3¾¢ for Square and 4¢ @ 4¼¢ for Hexagon Nuts.

Steel.—The activity noted in our last report still continues. Mills are all busy, some of them very much pressed, and prices remain steady.

Muck Bar.—There have been no sales reported here for some time, in the absence of which it is difficult to give accurate quotations. The mills here make very little for sale.

Scrap.—There is a continued fair degree of activity, and prices are reported steady, as follows: No. 1 Wrought, $28 @ $30, net; Wrought Turnings, $20 @ $22; Cast Turnings, $14 @ $16, gross; Car Axles and Car Springs, $37 @ $39, net; Old Car Wheels, $33 @ $35, gross; Machinery Metal, $18 @ $20, gross.

Window Glass.—According to agreement, the factories throughout the West will blow in to-morrow, after a suspension of three months. The outlook is considered favorable for an average business this fall, although the margin for profit is not as satisfactory to the manufacturer as it was a year ago.

Coke.—There is a continued steady demand. Large shipments are being made daily, both East and West, and while the production is large, the consumption is fully equal to it; hence there is no accumulation. Operators generally are not disposed to contract for delivery beyond 30 days, at the ruling prices, $1.50 per ton, delivered free on cars at ovens, for Connellsville.

Coal.—There has been nothing new developed in this interest during the past week. Railway operators are busy shipping to points not accessible by river, while operators whose mines are located on the Monongahela and Youghiogheny Rivers, are not doing much, owing to continued suspension of navigation. The latter have more or less Coal in the down-river markets, and they would like navigation to remain suspended until November.

Petroleum.—The situation as regards the raw article remains much the same as noted for some time past. With the production larger than ever before and the visible supply unprecedented, it is not strange that the article is almost without value, but operators continue hopeful, notwithstanding the outlook is discouraging. As regards Refined we have to report that business here continues very dull for the season, and, as stated in our report of last week, it looks very much as if the refining business were being transferred from the interior to the seaboard.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, Sept. 13, 1880.

All manufactured products are steady at our last quotations. Prices are stiff and tend upward.

Pig Iron.—There is nothing of special interest in the Pig market. Prices of higher grades are especially strong, and another small advance is probable. We quote same as last week: No. 1 Foundry, $25 @ $27; No. 2 Foundry, $23 @ $25; Gray Forge, $20 @ $22; White and Mottled, $18 @ $20; Car Wheel Metal, $40 @ $45.

Miscellaneous Articles.—Scraps are strong and not in very liberal supply. The boom in Pig last winter and spring brought to market everything in the Scrap line, much of which had been accumulating for years, and the junk dealer now finds only the result of a season's breakages and worn-out articles. Old Rails are strong. We quote: Wrought Scrap, $20 @ $24. Cast is worth $15 @ $17; Old Wheels, $28 @ $30. All articles in this group are strong at quotations.

Ores—Are firm at last figures. We quote: 50 % Brown Hematite, per ton, $2 @ $2.75; Red Fossil, $2 @ $2.25.

Nails—Continue strong at $3.25 rates; usual discount on 200-keg lots and for cash.

Manufactured Iron.—The Bar mills of the district are doing a satisfactory business. prices are giving them a fair profit, and they find ready sale for their products. We quote Bar Iron at $2.40; Railroad Spikes, $3; Track Bolts, $4; Trestle Bolts, $4.50; Fish Plate, $2.50. All the articles in this list are firmly held and no concessions are made.

Coal.—We quote run of mine at $1.65 @ $1.75, at the mills; Lump, 10¢ @ 12¢ per bushel.

Coke.—We quote steady at $3 at the furnaces; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.—There has been no advance in Rails, but prices are very stiff. The mills have a fair show of orders. Iron Bars, $46 @ $48; Steel, $60; Small T, $55, and very strongly held.

Lead.—We quote: Pig Lead, 4½¢ @ 4¾¢; Bar Lead, 5¼¢ @ 5½¢, with an improving demand. None handled here at wholesale except East Tennessee product.

Steel.—Plow Slabs, 3 in. and under, $4.70; Black Diamond, ordinary sizes, 13¢.

BOSTON.

SEPTEMBER 10.—There has been rather a softer tendency in raw Iron since our last, and holders are beginning to feel the continued cautiousness of buyers. But we still quote *American Pig* at $27 @ $28 for No. 1 $23 @ $24 for No. 2, and $21 @ $22 for Gray Forge. These prices are for lots f. o. b. at the shipping port; and freights to Boston, $1.20 @ $1.25. *Foreign Pig* is easier, and we quote $23 for Eglinton, $23 @ $24 for Glengarnock, $24 @ $24.50 for Gartsherrie, $20 @ $22 for English. The steamer Pharos brought 500 tons of Pig Iron from Glasgow. Old Rails are quoted at $32 for American, and $27.50 @ $29.50 for foreign. *Manufactured Iron* is in fair demand at unchanged prices. We quote Bar at 2⅛¢ @ 2¼¢ for best Refined, and 2⅛¢ @ 2¼¢ for Common; Norway, $4.15 for Bars and $5.15 for Shapes; Nails at $3.15 per keg. Plates at 3¼¢ for Tank, 3½¢ for C. No. 1, 3¾¢ for C. H. No. 1 Shell, and 4¼¢ @ 5¢ for C. H. No. 1 Flange. *Copper* is quiet and easy, large lots of Lake being available at 18¾¢. The jobbing price of Ingot Copper in Boston is 19½¢ @ 20¢ for Lake, and 18¼¢ @ 18½¢ for other brands. An offer of 50,000 lbs. Baltimore at 18¢ was refused. *Lead* is quiet and easy at 5¢ for round lots and 5¼¢ in a small way. *Spelter* is dull, and though 5¼¢ is asked, 5⅛¢ would probably purchase good-sized lots of Western. Small lots command 5½¢ for Western and 4⅞¢ @ 5¢ for remelted. *Tin* has continued dull and drooping, and in the absence of business quotations are nominal. Holders are willing to sell Straits at 19½¢ for large lots and 19¼¢ would probably buy. Tin Plates have met with but a slow and unsatisfactory demand the past week, but we continue to quote large lots as follows: *Charcoal Tin.*—Melyn grade at $6.75 for I. C., and $8.25 for crosses; Allaway grade at $6.37½ for I. C., and $7.87½ for crosses. Charcoal Ternes at $6.37½ for Dean grade I. C. 14x20, and $12 for ditto ditto 20x28. Coke Tin at $5.50 for B. V. grade I. C. Coke Ternes at $5.37½ @ $5.50 for 14x20 and $10.50 @ $11 for 20x28.—*Commercial Bulletin.*

LOUISVILLE.

Messrs. GEO. H. HULL & Co., Commission Merchants, report to us as follows, under date of September 10: The market is very strong and sales large. Cold-Blast Irons, however, show a decline in price, and we revise quotations accordingly. Some large sales of Hot Blast, particularly of mill grades, have stiffened the market, and holders are asking an advance. The outlook is much more favorable than a week ago. We quote for cash as follows:

FOUNDRY IRONS.	
No. 1 Hanging Rock, Charcoal	$29.00 @ 30.00
No. 2 " "	27.00 @ 29.00
No. 1 Southern, Charcoal	26.00 @ 27.00
No. 2 " "	24.00 @ 25.00
No. 1 Hanging Rock, Stonecoal and Coke	26.00 @ 27.00
No. 2 Hanging Rock, Stonecoal and Coke	24.00 @ 25.00
No. 1 Southern, Stonecoal and Coke	26.00 @ 27.00
No. 2 " "	24.00 @ 25.00
"American Scotch"	25.00 @ 26.00
Silver Gray	23.00 @ 25.00
Scotch	30.00 @ 31.00
MILL IRONS.	
No. 1 Charcoal, Cold-short and Neut'l.	23.00 @ 26.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	23.00 @ 23.50
No. 2 Stonecoal and Coke, Cold-short and Neutral	22.00 @ 22.50
No. 1 Missouri and Indiana Red-short	27.00 @ 28.00
White and Mottled, Cold-short and Neutral	20.00 @ 21.00
CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock, Cold-blast	35.00 @ 44.00
Alabama and Georgia, Cold-blast	35.00 @ 42.00
Kentucky, Cold-blast	35.00 @ 42.00

W. B. BELKNAP & Co., Iron and Steel merchants, Nos. 113 and 115 West Main street, report to us as follows, under date of September 11: Contrary to the predictions of many, there has been no advance in Bar Iron, but, to quote the slang of the day, "on the contrary, quite the reverse." That is to say, with the opening of navigation to Pittsburgh that city is laying claim to its old supremacy, and seems likely to furnish ample supply for the fall trade to lower river points. Some other mills, too, in the anxiety to sell certain kinds of Iron, have shaded the card to below cost figures, gauged by the usual computation, based on present price of Pig. A break in the price of Rivets, which has shown itself during the past fortnight, goes to mark the dissolution of another combination, the inevitable result of attempting to uphold fictitious prices on the strength of simple faith in fallible humanity. Nails are selling freely, but there seems no inclination to advance the card. Hoop and Sheet Iron, incident to the season, are moving actively.

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of September 13: Trade ruled active and in all respects perfectly satisfactory for the past week, with values firmly maintained at annexed figures:

Ref. Bar Iron, 1 to 6 by ¾ to 1	₩ lb	2½ @ 2¾¢
" " 1 to 4½ by 1½ to 2	₩ lb	2½ @ 2¾¢
" ¾ to 2, Round and Square	₩ lb	2½ @ 2¾¢
Hoop Iron, 1¼ wide and upward	"	3½ @ 3¾¢
Band Iron, from 1¼ to 4 in. wide	"	3 @ 3¼¢
Horse-shoe Iron	"	3¾ @ 4 ¢
Norway Nail Rods	"	6¼ @ 6½¢
Black Diamond Cast Steel	"	13½ @ 14½¢
Machinery Steel	"	9 @ 9½¢
Cast Spring Steel	"	8 @ 8½¢
Common Horse Nails	"	10 @ 14 ¢
Perkins' Horse shoes, ₩ keg of 100 lbs.		$4.37½
" Mule shoes		5.37½

	10	9	8	7	6
Putnam Horse Nails, ₩ lb	21	22	23	24	26¢
Globe Horse Nails, ₩ lb	20	21	22	23	25¢
Railroad Spikes				3 @ 3¼¢	

Less list discount to the trade.

R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows, under date of September 13: The Iron market remains quiet, demand moderate, and prices about the same as last report, viz.:

Baltimore Charcoal Wheel Iron	$40.00 @ 45.00
Virginia " "	40.00 @ 45.00
Anthracite No. 1	26.00 @ 28.00
" No. 2	24.00 @ 25.00
" No. 3	21.00 @ 22.00
" Mottled and White	19.00 @ 20.00
Charcoal C. B. Blooms	68.00 @ 70.00
" " Billets	68.00 @ 70.00
Refined Blooms	55.00 @ 60.00

CINCINNATI.

Messrs. E. L.

almost totally neglected, are coming into request. The inquiry for Car-Wheel and Malleable Irons also shows an improvement, and there is every indication that we shall have an active and very satisfactory fall business. Further round sales of Old Rails have been closed. New Rails continue in good demand at full prices.

FOUNDRY IRON.	4 MOS.
No. 1 Hanging Rock Charcoal	$30.00 @ 31.00
No. 1 Strong Neutral Coke	28.00 @ 29.00
No. 1 American Scotch	24.00 @ 25.00
GRAY FORGE.	4 MOS.
Neutral Coke	24.00 @ 25.00
Cold-Short	22.50 @ 23.50
CAR WHEEL AND MALLEABLE.	4 MOS.
Hanging Rock, Cold-blast	46.00 @ 50.00
" Warm-blast	35.00 @ 40.00
Southern Car Wheel	41.00 @ 45.00
Maryland, Nos. 1 and 2	35.00 @ 36.00
" Nos. 3 to 6	38.00 @ 40.00
Lake Superior, Nos. 1 and 2	35.00 @ 36.00
" Nos. 3 to 6	38.00 @ 40.00

ST. LOUIS.

Messrs. CARD & HOFFER, Pig Iron and Iron Ore Merchants, 417 Pine street, write us as follows, under date of September 11: There is no change in prices or in condition of the market. We continue quotations of last week:

HOT BLAST CHARCOAL.	
Missouri	$28.00 @ 29.00
Southern	26.00 @ 28.00
Hanging Rock	29.00 @ 30.00
COKE AND COAL.	
Missouri	None offering
Southern	25.00 @ 29.00
Ohio	28.00 @ 30.00
MILL IRONS.	
Gold-short	24.00 @ 25.00
Red-short	26.00 @ 28.00
CAR WHEEL IRONS.	
Missouri	None offering
Southern	35.00 @ 42.00
Ohio	40.00 @ 45.00
ORE.—Nominal.	
Ore for fix	10.00 @ 15.00
For furnace	6.50 @ 7.50
Brown Hematites	no market.

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of September 14: The market at present writing shows no change in last report:

Scotch Pig Iron, according to brand	$25.00 @ 29.00
Am. Scotch Pig Iron " "	29.00 @ 31.00
American No. 1 " "	28.00 @ 30.00
" No. 2. " "	25.00 @ 27.00
" No. 3. " "	22.00 @ 24.00
Va. Cold-blast Charcoal, neutral	40.00 @ 44.00
Va. Warm-blast Charcoal, "	32.00 @ 35.00
Old Rails	26.00 @ 28.00
Wrought Scrap Iron, No. 1	23.00 @ 25 00
Cast Machinery, No. 1	22.00 @ 24.00
Richmond Refined Bar Iron, Stand'd.	2.6 @ ....
Horse Shoes, Tredegar	.... @ 4.00
Mule " "	.... @ 5.00
Old Dominion Nails, (standard size)	.... @ 3.00

For lots of 200 kegs, 10¢ per keg less.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., August 30, 1880.

THE IRON TRADE

has not undergone any especial alteration within the week which has elapsed since the date of my most recent letter. There has been a little uncertainty at Glasgow, and in some of the markets which are mostly regarded as being subsidiary thereto as regards crude irons, owing to the continued strike of the Scottish miners. On the whole, however, the trade generally cannot be said to have retrogressed, notwithstanding the relative weakness of Scotch warrants and some little flatness at Middlesboro'. It is difficult, even for well-informed persons, to perceive why warrants should have gone back in the way they have done; indeed, the only way of comprehending the movement is to attribute it to a desire on the part of the ironmasters to prevent any great rise for the time, lest the miners should thereby be encouraged to persevere in their demand for higher wages. The furnace owners are therefore sending a much larger quantity of iron into the official stores than they did a few weeks ago, and that in spite of the fact that the production is now less than one-third of what it was when the additions to the stores were much less. At the same time many of the makers' brands are several shillings the ton dearer, and are likely to advance still further should the dispute be prolonged, owing to the forward engagements of the producers. Already some of the No. 1 brands are becoming soarce, the shipping requirements being well maintained—nearly 100 per cent. more than those of the corresponding period of last year, as a matter of fact. The "bears" on the Glasgow Exchange are just now having a good time of it, and are co-operating in an active and organized manner in order to hammer down and keep down warrant quotations. This at once more demonstrates the truth of the assertion that the ways of the Glasgow men are as mysterious as those of the Heathen Chinee, and quite as dark as those of Bret Harte's celestial card-player. Just at the moment it is obviously difficult to forecast the precise course which the Scotch pig iron market may be expected to take within the next few weeks. Excellent authorities incline to the opinion that the strike will prove to be exceedingly protracted, both the parties to it being apparently most s ubbornly bent upon success. It is clear, of course, that both sides cannot win the fight, and, of the two, I think the chances are in favor of the ironmasters. Had they selected the best possible time for a cessation of work in their own interests, I much question if they could possibly have secured a better one than the present. Perhaps they knew this when they arrived at the decision to fight the men! At all events, stocks are larger than ever they have been at any former period in the entire history of the trade. Further than that, there is an excellent shipping demand, and most of the surroundings seem to point to its continuance or possible enlargement. The masters thus have a rising market behind them, which, with the exercise of good judgment, they may so manipulate as to cause its force to operate in their favor. On the other hand, the dispute is certain to do some harm to the Scottish iron and coal trades by causing the diversion of shipping orders to South Wales, Cleveland and other competing districts, besides which the scarcity of fuel is already inconveniencing the home founders and other users of pig iron. A few of the coal owners, mostly the smaller class of men, have thought fit to "cave in" to their men, and have conceded the extra 1/ per day, but their total production is relatively insignificant, and their action has not affected, nor will it largely affect, the issue. That the minimization of the output is being conducted with energy is amply proven by the fact that on Friday night, at the close of the week's business, there were but 32 Scotch furnaces blowing, as compared with 118 three weeks ago. The make is thus brought down from nearly 25,000 tons to 5000 tons or so weekly. With anything like a continuance of the current shipping demand of 14,000 to 15,000 tons weekly, or three times the production, it is difficult to avoid the expression of the conviction that prices must and will shortly go up. The chief element of uncertainty in the matter seems to me to lie in the doubt which prevails as to the quantity of pig iron held in the yards of the makers themselves. No statistics on this head appear to be available—to the ordinary public, at all events. Some of the initiated may be well posted on the subject, and reasoning by analogy, their knowledge would appear to indicate the existence of very large stocks in this direction; otherwise, there would be likely to be a more vigorous tendency towards higher figures than at present exists. It is not unlikely, in any case, that as soon as the upward change does set in it will progress with remarkable vigor, and that we may see prices go up literally by leaps and bounds. *Che sarà, sarà!* In Cleveland prices have been somewhat dull—for what reason I do not pretend to understand. One would have supposed that if the Scotch strike were good for any other district, it would be so for Cleveland, its nearest neighbor, tentative competitor, and alternative source of supply. With the Scotch ironmasters in trouble of this kind, their fellows in Cleveland have no reason whatever for despondency, but should rather be expected to "raise their whips" and go further afield than ever. Apart from any other advantage, they certainly get more orders from Scotland itself under such conditions, and it is not unreasonable to suppose that some of the shipping trade is diverted in their favor. Yet, in spite of these considerations, we hear of a sluggish feeling at Middlesboro', although their official stores contain about 92,000 tons of pig only, and their shipping returns reach over 2500 tons daily, besides which their local industries were scarcely ever better or more legitimately engaged. Probably the whole thing may be accounted for by the weakness of Glasgow warrants, and by the uncertainty as to the duration of the strike. In the remaining smelting districts of the country the feeling of the iron market is undoubtedly good and steady. The hematite furnaces of Furness and Cumberland were never better engaged, their whole output being on deliveries, with a free flow of orders for near futures, and a sufficient number of inquiries to induce the hope and expectation of higher quotations than those now obtaining. Throughout Lancashire, Yorkshire, Derbyshire, Lincolnshire and Northamptonshire the blast-furnace owners are contented, and the great majority of them are disposing of their iron pretty nearly as rapidly as it is being made. This is an excellent state of things, inasmuch as it has often happened that some of these producers of common pig—such as Lincolnshire and Northamptonshire—have been obliged to flood the market, and so upset prices at inconvenient junctures. Even in South Staffordshire pigs are in better request, and the outlook is looked upon as being so favorable that the number of operative furnaces is being steadily increased. In Shropshire and the Forest of Dean, too, these tokens of progress are growing, while South Wales and Monmouthshire are doing a very satisfactory amount of iron business. As regards manufactured iron generally there is not much that is at once new and true to narrate. The mills and forges, as a rule, are turning out very respectable tonnages, even if it be the case in some instances that the time worked is not up to an ordinary maximum. The call for bars and sheets, as well as plates, tube strips, angles and constructive iron is undoubtedly good, while some of the hoop mills are quite busy. The course of prices is not excited, partly because buyers are chary of creating and encouraging anything approaching to a "rush," and partly because vendors have such unabated confidence in the probabilities of the near future that they firmly decline to enter into long future contracts, but prefer to take their chance of things moving up satisfactorily. If these gentlemen have strength of mind sufficient to maintain a strict and rigid adherence to this course of action, they will do well not only for themselves, but for the trade generally, seeing that they will throttle speculation, and, further, keep the reins wholly and absolutely in their own hands. Any symptoms of retrogression, however, would be certain to upset their equanimity, and would give the speculators an opportunity of which they would not fail to make the most. The harvest continues to progress splendidly, this being the third week of almost unbroken fine weather, during which the cereal crops have admirably ripened, and a large proportion reaped and gathered in the most satisfactory condition.

SCOTCH PIG IRON

is quiet at present, on the basis and for the reasons already stated in this letter. In Connal's stores there are 464,887 tons, against 298,525 tons, and an increase of 4556 tons during the week. Shipments were 15,877 tons, against 7260 in the corresponding week of 1879. Up to date shipments have increased 154,923 tons. Cleveland imports grew 660 tons last week. Writing from Glasgow on August 27, James Watson & Co. said: We have to report a weaker market for Scotch pig iron warrants, with a fair amount of business done. Makers' iron is still in request and special brands maintain their value, owing to the strike. On Monday the price of warrants declined from 55/6 to 54/9, cash, and on the following day the market still further gave way to 54/4 per ton. On Wednesday morning Messrs. Wm. Baird & Co. reduced their prices, and warrants rapidly fell to 52/6, rallying, however, to 53/1½, cash. Yesterday the price improved to 53/6, while to-day the market has again dropped to 53/, closing sellers thereat. The shipments last week were 15,877 tons, as compared with 7260 tons for the corresponding week of 1879. We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	56/	53/6
Gartsherrie, at Glasgow	61/6	55/6
Coltness, "	62/	56/
Summerlee, "	60/	55/
Langloan, "	61/6	55/6
Carnbroe, "	59/	55/6
Calder, at Port Dundas	59/6	54/6
Glengarnock, at Ardrossan	58/6	55/6
Eglinton, "	55/6	53/6
Dalmellington, "	56/6	54/6
Shotts, at Leith	62/6	56/

John E. Swan & Bros.'s prices for No. 1 agree with these.

HEMATITE PIGS

are strong and in good demand, at about the following figures, which may be useful for subsequent reference, although they may have been anticipated in a few instances by cable. The quotations are 1/ or 1/6 more, according to port of shipment, &c.:

	No. 1.	No. 2.	No. 3.
Cleator	90/	87/6	85/
Lonsdale	76/	75/	74/
Workington	76/	75/	74/
West Cumberland	76/	75/	74/
Lowther	76/	75/	74/
Moss Bay	76/	75/	74/
Harrington	76/	75/	74/
Solway	75/	74/	73/
Maryport	75/	74/	73/

These are all West Cumberland brands. The productions of Cleveland, Furness and the Forest of Dean are approximately the same, as also are the hematite pigs of the Wigan Company.

CLEVELAND QUOTATIONS

are:

No. 1 Foundry	47/	No. 4 Forge	41/
2 "	44/6	Mottled	40/6
3 "	42/	White	40/
4 "	41/6	Kentledge	42/6

Of last week's Cleveland shipments 500 tons were for the United States.

THE INSTITUTE MEETING,

of which I do not need to say much, as you will have received copies of the papers presented before this letter reaches your hands, would appear to have been a success. The Düsseldorf Exhibition proved a great feature of attraction to the members present, inasmuch as its exhibits enabled them to inspect and study, in a ready and concentrated manner, the best and most recent products of the German iron and steel works Mr. Holley's enforced absence through illness was much regretted. I am glad to learn, however, that he is progressing favorably, and hopes soon to be about again. The selection of Mr. J. T. Smith, managing director of the Barrow Iron and Steel Company as next year's president is certain to prove popular. Mr. Smith is of good personal presence, possesses a happy temperament, and has a wide and varied experience of all matters pertaining to iron and steel.

FROM SHEFFIELD

this week's reports are decidedly more favorable in tone, and are evidently veering round in the direction which I last week indicated as being the correct one. We are now told that orders are on all sides more plentiful, and that travelers who are out in the provincial districts are not only sending home better order sheets, but are finding the collection of outstanding accounts much easier than has been the case for a long time past. At the larger iron and steel works there is an excellent turnover, in respect of boiler and ship-plates, all sorts of railway permanent way and rolling-stock requisites, angles, ship-frame iron, wire and miscellaneous work. Cast steel and converted sorts are moving rather more freely for the United States, Canada, Russia and France, as well as on account of the home engineering works. For files, saws, sheep shears, tools in general and for cutlery there is a fairly good and increasing sale. As regards the competition of Sheffield with "American novelties," I take the following from the latest issue of the *Ironmonger*, contributed by the local correspondent of that journal: "It is satisfactory to find that our American cousins are not doing so great a trade as they were with this country in what are known as 'American novelties;' not because the demand for such goods has fallen off, but because manufacturers in Sheffield, as well as manufacturers elsewhere, have discovered that they can, in many instances, manufacture these novelties quite as well as they can be made in America (in some cases very much better), and almost invariably place them on the market for 20 per cent. less money. Thus the import trade with America in this description of goods has considerably fallen off. Here, in Sheffield, the American 'Lightning' pruning saw—a great improvement upon the old description of small hand saws, and which for some time has been in considerable demand—has been successfully imitated, and can be made fully one-fourth cheaper than the saw can be brought from America. It took some time to convince the Sheffield workmen that they could make the saw if they tried. This difficulty got over, the saw is now being manufactured in large quantities, and its 'lightning' qualities are just as remarkable as those of the American copy. This is but one instance. Wolverhampton and Willenhall are doing in other directions what Sheffield is doing in the case of small saws, and the manufacture of what may be called 'Anglo-American novelties' is now becoming quite an important business. But this is not the only satisfactory feature of the present situation. Our manufacturers and workmen alike, having d scovered that the Americans do not possess a monopoly in the art of producing novelties and ingenious contrivances for saving labor, are turning their attention in the same direction. Invention is being stimulated here, as well as elsewhere, in a way hardly imagined a few years ago, and it is not improbable that the Americans may find us formidable rivals even upon ground which they have hitherto had pretty much to themselves. Their clocks cannot yet be approached for cheapness, but saws, locks, iron fittings of various kinds and knick-knacks generally can be produced at home equally as well and much cheaper. This constitutes a most cheering 'sign of the times.'"

AMERICAN COMPETITION.

This has grown to be a somewhat stock heading in some of the English newspapers, although there are but few of these journals which really face this question in a square and straightforward manner. Of these few, one of the most prominent is, perhaps, the *Ironmonger*, the issue of which for August 28th contains several items of no small interest to American manufacturers. Some of these items are favorable to your producers of manufactured goods, while others rather tend in the opposite direction. A letter from Sydney, New South Wales, dated July 6th, contains more striking evidence of the firm root which American goods have obtained in the Australias than I have latterly perused. The writer says: "The statement that British makers have no need to fear American competition is also likely to produce misconception. Few unbiased observers will indorse his view, for the progress made by our cousins in the last 15 or 20 years has been very great, and the United States agents at the exhibition appear satisfied with their future prospects. As one instance, I may mention that Messrs Fairbanks, of New York, have just secured the contract for the supply of weigh bridges to the government railways in Victoria. A large ironmonger here told me the other day that whereas 20 years ago American and foreign goods constituted only 5 per cent. of his stock, they now amount to 20 or 25 per cent. American goods of many classes, he assures me, are largely preferred to English, not only by the consumers, who can judge of the quality, but by the trade, on account of the careful, practical way in which they are packed and the correctness with which orders are executed. He instanced English screws as an apt illustration of the latter point. One case will perhaps have several gross below its proper contents, while another will have too many. He gets all he pays for, but in such an uncertain, slap-dash way that every case has to be examined before being sent to the country. He sends American goods away *just as they come, with perfect confidence that all will be right.* Again, he says, there is an almost absolute identity even in the commonest articles of American make, while the English differ materially; and altogether, the trouble of doing business with English houses is very great, owing to the lack of proper control by experienced men. In locks and screws the Yankees are not making much, if any, headway, their cheap goods being too rough and their best makes too dear, but in adzes, picks and axes they have superseded us, and are beginning to do so in ordinary hand saws. Much of the English trade has been lost, in his opinion, through the insane refusal of the makers to comply with the wishes of their Australian customers, to whom they seem inclined to dictate as if they were children. But, on the other hand, an agricultural machinery firm expresses an opposite opinion, and have never experienced any difficulty in gaining what they require, which, as they put it, is owing entirely to the clear and precise way in which they have taken the trouble to explain the nature of the case and to express their wishes." Another article quotes the judges' flattering report upon the Fairbanks scales at the Sydney Exhibition, while an article on the same page pays a passing compliment to your cut-nail manufacturers. The Birmingham correspondent, on the other hand, narrates that in picks, shovels, axes, &c., the English makers are regaining much of their lost ground in the South American and other markets.

STAFFORDSHIRE AND BIRMINGHAM

are steadier, both as regards iron and hardwares. The 'Change meetings of last week were thinned in point of attendance, owing to the Iron and Steel Institute meeting on the Continent, and the amount of business done in iron was therefore less, but there was no quotable weakness in prices—most of the works being reported to be well engaged. Hoop orders from the United States were reported to be good, with many inquiries from your side per cable. It is stated that an American house has taken a small works in Staffordshire, whereat buckles for cotton ties are being manufactured and fastened to the hoops, ready for export to the United States. This story reads improbable, but I notice it is given in one form or other by several respectable journals. Hoops are now quoted £6. 15/ @ £7, at the works. Bars remain at £8 for marked sorts, but reliable iron is being sold unmarked.

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, August 28, 1880.—*Metals.*—Harvesting accounts from the interior continue highly satisfactory, but trade will not begin to improve seriously till the many merchants shall have returned to their places of business, as this is our dull season. Metals have meanwhile been steadily on the rise. *Copper* has risen a couple of francs again; we quote Chili Bars, 160 @ 162.50 the 100 kilos.; Ingots and Slabs, 167.50; Best Selected, 167.50 @ 170; and pure Corocoro Ore, 167.50. *Tin.*—There has been another rise of 15 francs, and we now quote Banca, 245; Billiton, Straits and Australian, 242.50; and English, 237.50. *Lead.*—An improvement of 3 to 4 francs has taken place; we quote the same 41.50 @ 42.25 francs. *Spelter* has risen 50c.; we quote here and at Havre, 47.50 @ 48 francs. *Iron* has been slightly looking up, but the stocks on hand are still too large to admit of much of a rise. We quote in this city: Rod Iron, 18 @ 18.50 francs; Merchant, 19; Flooring Iron, 19.50; Iron for Horse Shoes, 21; and Common Sheet Iron, 26. There is every sign of a continuance of demand here; there is, consequently, a fair prospect ahead that prices will be firmly supported, especially as the Iron markets abroad have for the past month or six weeks again shown much vitality, with an upward tendency. The import of Architectural Iron into Paris, during the first six months of the year, has been 20,904 tons, against 14,238 during the same time in 1879, a difference in favor of this year of 6666 tons; of Pig Iron, 14,160 tons, against 10,123—excess, 4037 tons. *Coal.*—The Coal market is getting better daily, in spite of the large arrivals by rail; navigation is also being resumed in all directions. Consumers, remembering the short supply of last winter, now lay in stocks in time; hence the great activity displayed. At the North and in the Pas-de-Calais there is a considerable stir, fostered by the increased freighting facilities afforded by the Northern Railroad. The consumption of Coal in the Department of the North in 1879 has been 4,584,202 tons.

BELGIUM.

(Revue Universelle.)

BRUSSELS, Aug. 28, 1880.—*Iron.*—Steady progress can be reported. We quote to-day Merchant Iron, 12.50 @ 13 francs; Sheet Iron, 17.50 @ 18; and good quality Fig, 6 @ 6.50. At Charleroi a good business is doing in Merchant Iron at 14 francs. Steel Axles are worth 26 francs, and Hoops 25 francs. An adjudication has taken place for 1100 cars, which went at a low figure, the syndicate of railway material makers having ceased to operate. The Iron market has of late been improving much faster in Belgium than had been anticipated; at nearly all our works many orders and inquiries are dropping in, causing makers to advance their prices gradually. There is, meanwhile, no excitement and no speculation; of this we are glad, and, indeed, this second revival, as we may call it, gives promise of being a more lasting one than its predecessor in January. A good sign is also the receipt of numerous commands from abroad, especially the more distant countries of the East, attracted by the comparatively moderate figures that have been ruling among us. Had prices been run up fast under the impulse of speculation, we should have driven away all these customers, many of whom are new, who would have supplied themselves in England and Germany instead. As it is, the outlook is decidedly encouraging here, without holding out a prospect of much of an advance, even if the demand should remain as active as it is at present during the ensuing month. *Coal.*—In the Mons basin the freight rate to Paris has risen to 7.50 francs, the pressure to ship being great; with an insufficient number of boats at hand. In the Charleroi basin the Coal companies expect a good season. All they hope for is that the means of transportation may not fail them for the heavy business they are looking forward to. Coal is firm everywhere—common particularly so.

GERMANY.

(Borsenhalle.)

HAMBURG, Aug. 28, 1880.—*Iron.*—From Dortmund we receive the following: "There is every appearance that the Iron industry is on the eve of developing vigorously at this center once more, although many parties seem impatient at the slowness with which this revival makes itself felt. Foundry and Puddle Pig advanced a little during the week. This will soon have an effect on Iron prices of half wrought and wrought goods. Confidence in the establishment of a permanent improvement revives, and this better feeling is strengthened by the favorable advices we receive from abroad. The price list laid down by the combined Rhenish-Westphalian rolling mills is carried out strictly, although it can hardly be concealed that this combination, like all other similar ones, is rather calculated to injure the development of trade. The various branches of the Iron industry are tolerably busy, and on a satisfactory basis; but fresh orders are still quite welcome. But few large adjudications are impending in the near future. On the 26th inst. some Steel Rails were adjudicated upon for delivery to the Oder Railroad. The meeting of the Iron and Steel Institute at Dusseldorf is, just at present, absorbing the attention of our ironmasters. Everybody seems fully impressed with the important bearings which the meeting will have in our relations with England. *Coal.*—The dullness in this branch, despite the nearness of the fall, does not yet make room for greater activity. Mining is carried on more extensively than last year at this time; prices, if anything, tend downward. Shipments to Holland keep steady, but in Belgium we have lost foothold very much. A project is on foot to improve the navigation of the Ruhr, which has declined very much." *Metals.*—There is no change here. Berlin meanwhile quotes as follows: Copper, the 50 kilos., 66.75 @ 67.50 marks English, and 71.50 @ 77 Mansfield. Tin—Common English, 93.50 @ 94; Lead—Hartz, Silesian and Saxonian, 19, and Spelter 18.75 @ 19. We still receive advices from Upper Silesia and Alsace-Lorraine and the Tarre district with respect to Iron. All coincide in reporting more favorably. General prospects in Germany may therefore be pronounced as essentially promising.

AUSTRIA.

(Austrian Trade Journal.)

VIENNA, Aug. 29, 1880.—*Iron.*—The most important recent event in this neighborhood has been the reduction of the price of Merchant Iron by the Bohemian rolling mill owners, who have lowered the price 1.50 florins per 100 kilos. They have been induced to take this step in view of the accumulation of stocks and the many lots latterly imported from Upper Silesia, which obliged Bohemian works to make some concession in order to retain their customers. This measure will, however, not cause Austrian makers to deviate from the rates they had fixed, which will be sustained for the coming fall campaign. They compete more particularly with Hungarian producers. Makers of scythes, &c., are also about to form a combination. The retail hardware trade is looking up decidedly. Iron is quite firm, and the reduction of prices in Bohemia has failed to affect the market. We quote at the close: Pig Iron, 54 @ 60 florins per ton; Gray ditto, 56 @ 62; Bessemer Pig, 65 @ 70. At the works, Merchant, Styrian and Corinthian, 140; Bohemian and Hungarian, 120; Sheet Iron for locksmiths, 170 @ 185; ditto for flooring, 185 @ 195; ditto for boilers, 170 @ 185; ditto for tanks, 155 @ 175; and pillars, 125 @ 127, all per ton at Vienna. As for the metal market, prices have followed with tolerable closeness the course pursued in England; thus *Copper* has been weaker; *Tin* irregular; *Spelter* quiet and weak, and *Lead* firmer. We quote toward the close as follows: Copper, 70 @ 90 florins the 100 kilos.; Tin, 112 @ 117; Lead, 20.50 @ 22; and Spelter, 22 @ 23.50.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, August 24, 1880. *Tin.*—The week commenced with a quiet, rather dull tendency, Banca opening at 53.50 guilders per 50 kilos, and Billiton at 51.50. Soon, however, upon better advices from England, a livelier demand manifested itself, which, under extensive dealings, carried the price of Banca to 56.50 and of Billiton to 54.50. It was soon becoming evident, however, that this advance had been altogether too rapid, for upon the slightest weakening at London the anxiety to purchase disappeared. We cannot, therefore, at the close, quote Banca any higher than 55.50, and Billiton, 54 guilders.

EAST INDIES.

(Gilfillan, Wood & Co.)

SINGAPORE, July 26, 1880.—*Tin.*—There have been a good many fluctuations, ranging from $27.50 per picul, at which the market opened, to $29 per picul, at which it closes. About 600 tons in all have been settled, the bulk of which is for the United States. At the close the market is quiet, but should the American demand continue, we may expect further improvement. *Freights.*—The market has continued dull, and rates are rather lower, 27/6 having been accepted for dead weight to London. For New York there have been no charters, and the Oberon, fully engaged, is now the only vessel on the berth. The Nereid and Nehemiah Gibson have cleared, the former with 2100 piculs Tin; the Ancona, *via* London, with 2586 piculs; the Antenor, *via* London, with 840 piculs, and the Wealthy Pendleton, for Boston, with 504 piculs; the latter leaves the berth for Boston vacant. *Exchange* at the close is firmer, at 3/10¾ for 6 months' credit drafts per dollar.

(Rautenberg, Schmidt & Co.)

SINGAPORE, July 19, 1880.—*Tin.*—There has been an insufficient supply of Straits produce latterly, including Tin. A large business has, nevertheless, been done in the latter metal, prices improving from $25.75 @ $27.75, with no further sellers at the outside figure. *Exchange* has from 3/10 risen to 3/10¾.

(Schmidt, Kustermann & Co.)

PENANG, July 21, 1880.—*Tin.*—The market opened at $24.75 and then rapidly advanced to $27.50, since when it has kept between $26.75 and $27, closing to-day at $26.70 per picul, without further purchasers. The receipts have been 6300 piculs, the sales 2700 for Europe and America, and 2500 for India; 1000 piculs were sent to Singapore there to be sold. Stock left in Cazar is valued at 1800 piculs. *Exchange* at first remained steady, and then advanced to 3/9⅞ for 4 months' draft bills.

For more than a year the Chicago, Burlington and Quincy Railroad has been building a railroad bridge over the Missouri River a few miles below Plattsmouth, Neb., in order to have a crossing independent of the toll bridge at Omaha. The structure was recently tested in a most thorough manner, 400 tons weight of locomotives going over each span. The bridge stood the test easily. It is made of steel.

Foundry Bookkeeping.

BY A. O. KITTREDGE.

[The following paper was read before the National Association of Stove Manufacturers at the meeting at Niagara Falls, July 22, 1880:]

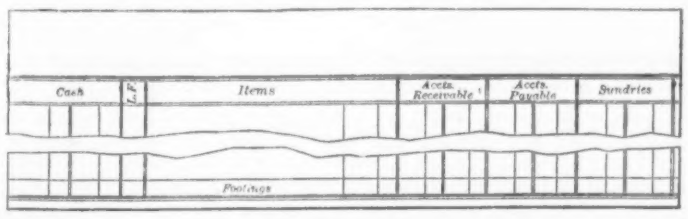
Mr. President and Gentlemen of the Stove Association: In inviting your attention for a short time to a consideration of foundry bookkeeping, I realize that I am speaking before business men, many of whom, by reason of extended experience, are far better able to treat upon this subject than I am. Accordingly, I approach my topic with considerable diffidence. Bookkeeping, however, is a subject to which I have given careful study, and in which I have had long disciplinary drill, and, therefore, I venture to hope that I may be able to suggest some thoughts worthy of your consideration.

Accepting the theory of certain writers with respect to the origin of property, money and trade, it is to be supposed that the art of bookkeeping was introduced at that period when transactions had become too numerous and too involved to be retained by the unaided memory. Undoubtedly the first records of accounts were quite simple, if not very crude, affairs. In the natural development of the art single entry preceded double entry, and it was only after great progress had been made in commerce and civilization that the latter system was invented.

I have said that, in all probability, bookkeeping was first introduced as an aid to the memory. The most common impression at the present time concerning books of accounts is that they are merely artificial extensions of the memory. While in the abstract such a view may be correct, there are features of bookkeeping made necessary by the requirements of modern business which are hardly comprehended in such a definition. In the books of accounts belonging to small retail concerns, we ordinarily find far more attention paid to charging than to crediting. Men are anxious to recollect all that is owing to them, and, accordingly, are very careful to charge for the merchandise which they send out. A step forward in the development of a system of accounts is taken when men credit those amounts which they are owing. Another step is taken when nominal accounts are introduced, as, for example, a merchandise account, and when the arrangement of debits and credits is such that they balance each other, which constitutes the double-entry system of the present day.

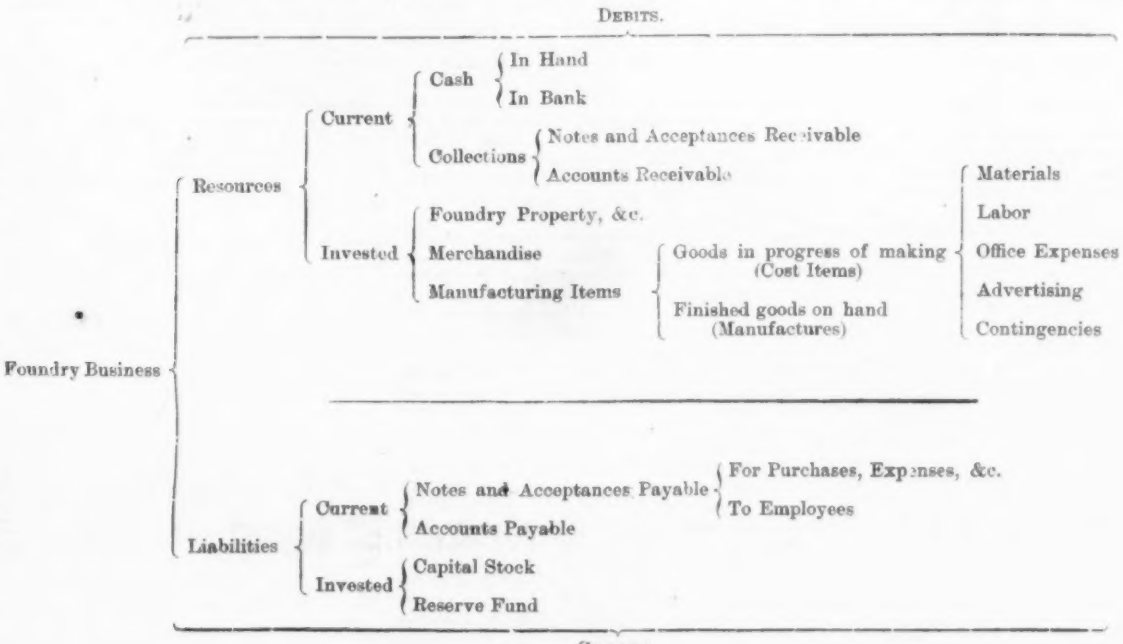
Besides the few nominal accounts which it is necessary to introduce, in order to make debits and credits balance—or, in other words, to make the double-entry system possible—the complicated industries of the present day make desirable more or less nominal accounts, which, though in themselves not essential as parts of the system, are yet very valuable because of the statistical information which they afford. The management of nominal accounts of this description is a subject to which business men are always giving more or less attention. The analysis of a concern's expenses is always carefully studied by prudent managers. I think I am safe in saying that there is not a set of books kept in any of the establishments representatives from which are present at this meeting, that are restricted to a bare record of resources and liabilities. I venture to assert that in every one of them more or less accounts are kept which are of statistical importance only.

While the advantages of double-entry bookkeeping are such as would seem to make it a vital necessity to every large business, there are many objections to it as it is ordinarily practiced. Double-entry bookkeeping, as taught in the schools and commercial colleges of the country, and as set forth in the text books, is a set of abstract principles—a bare skeleton, to be rounded out and developed to suit the requirements of the particular business in which it is to be used. One of the greatest objections to double-entry bookkeeping is the amount of rewriting usually required. There are, first, the blotter, cash-book and day-book for original entries; then the journal, which is a transcript from them, and, finally, the ledger. Single-entry bookkeping, by its very lack of system, and because there is no rewriting, is in many instances preferred to double entry, on account of its greater efficiency. I do not think this objection to double-entry bookkeeping is inherent to the system, but, rather, that it is a fault in the use of it. I think it is possible to keep a set of books by the double-system without any copying or rewriting at all.



Foundry Bookkeeping.—Fig. 3.—A Journal Provided with Cash Columns, and also Columns for Accounts Receivable and Accounts Payable.

I conceive the wants of every stove founder, with respect to his books, to be, first, that they contain an intelligent statement of his resources and liabilities, both in gross and in detail, ready for his inspection at all times. Second, that they exhibit such daily, weekly or monthly analysis of his outlay for materials and labor, and for incidental expenses, as will enable him to satisfactorily calculate the cost of his product, and to give intelligent direction to his foreman, clerks and salesmen. Third, that the system be so comprehensive and elastic as to admit of the employment of few or many clerks in keeping the books, as the size of his business and other circumstances may demand. Fourth, that all the books which are necessary to be kept in the establishment be parts or branches of one general system, each independent in itself, but all tributary to the general ledger, which shall contain a condensed record of the business free from unnecessary details; and last, but not least, that the books be arranged upon such a plan that no rewriting or copying is necessary.

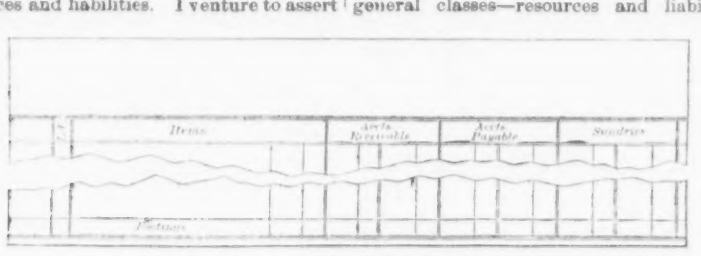


Foundry Bookkeeping.—Fig. 1.—An Analysis of the Accounts of a Foundry Business.

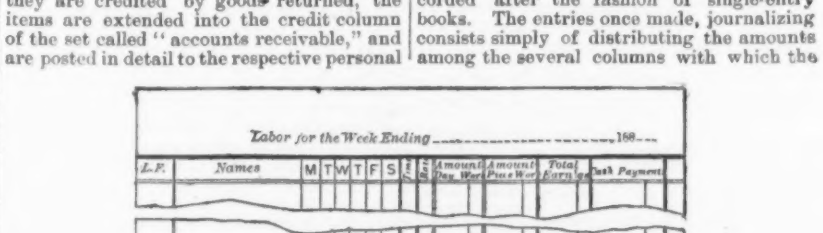
Let us stop for a moment and examine a foundry business in an endeavor to determine just what its parts and features are, and what sort of an analysis it is desirable for a set of foundry books to present. For this purpose we will refer to the diagram, Fig. 1. As in all other lines of trade, the accounts in a foundry business, both personal and nominal, resolve themselves in two general classes—resources and liabilities. The resources of the concern may be divided into two general classes, one of which we will term current resources, and the other invested resources. The current resources consist of cash, either in hand or on deposit in bank and collections, the latter comprising notes and acceptances due the concern, and the open accounts with its customers. The invested resources consist of the foundry property and such other real estate as the concern may own, whatever goods it may have on hand which are bought to sell again, and which are commonly called merchandise, and its manufacturing items. The manufacturing items of a foundry business consist, first, of goods in process of making, which are comprehended upon the books of the concern in certain statistical accounts, such as materials, labor, office expenses, advertising, &c., and all of which may be included in the general term "cost items." And, second, in the finished goods on hand. For the sake of distinction, I would call finished goods "manufactures," restricting the term "merchandise" to those goods which are bought to sell again. Turning now to the liabilities of the concern, they also may be divided into two general kinds, the first of which we will call current liabilities. Current liabilities include the notes and acceptances made by the concern, and what it owes on open accounts. Of the latter there are two general divisions. One is for amounts owing on purchases, expenses, &c., and the other is for amounts due to employees. The invested liabilities of a concern consist of its capital stock, which the business owes to the stockholders or proprietors, and the reserve fund, or any undivided profits, in case there be such items. By the general principles of double-entry bookkeeping the resources and liabilities of a concern must balance. All resources are of the nature of debit accounts and all liabilities are of the nature of credit accounts.

With this analysis of a business as a basis, I have attempted to organize a set of books embodying it, and which also possess the general features that I stated a few moments since seem desirable for every set of foundry books to possess.

The first step to be considered is some plan by which current resources and current liabilities shall be kept distinct from each other. Of current resources one item—viz., cash—is generally known from the cash book, no matter how the books in other respects are managed, and, therefore, for the moment requires no special consideration. It is necessary, however, to make some provision for managing the collections of the concern, or, as they may be more correctly termed, its accounts receivable. This end may be accomplished by adding an extra set of columns to the ordinary journal. Liabilities or accounts payable may be managed by adding a second set. Let the first set, as shown in Fig. 2, be entitled "collections or accounts receivable," and the other set "accounts payable." As we journalize, let all amounts which affect accounts receivable be extended into the columns entitled "accounts receivable," and in like manner let all amounts affecting current liabilities or accounts payable be extended, when journalizing, into the columns entitled "accounts payable." Then the footings of these respective sets of columns will show the aggregate of debits and credits belonging to the two classes of accounts they represent. Now, if there be opened up in the ledger an account called "accounts receivable," to which the footings of the columns of corresponding name be posted from time to time, and if in like manner an account called "accounts payable" be opened up in the ledger, to which the footings of the second set of columns are posted, the ledger will always show, by means of these two accounts, the exact condition of the business in gross.



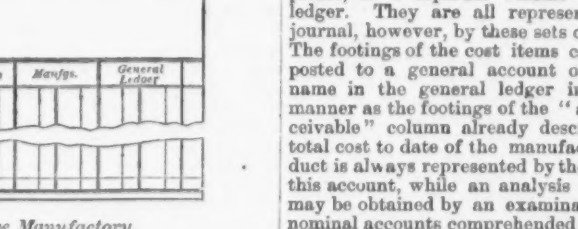
Foundry Bookkeeping.—Fig. 2.—Extra Columns added to an Ordinary Journal for the Purpose of Classifying Accounts.



Foundry Bookkeeping.—Fig. 6.—Form for Sales Book.

One account will show the aggregate of transactions with customers, and the balance in it will represent the gross amount due to the concern. On the other hand, the account called "accounts payable" will show the aggregate of transactions affecting the liabilities of the concern, and its balance will always show the gross sum owed by the concern.

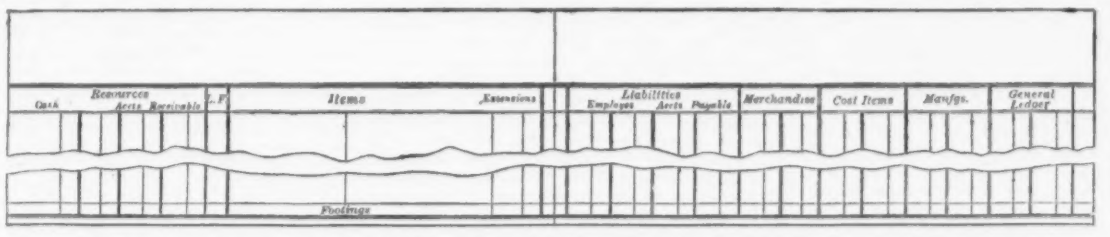
Perhaps I can present this idea in a little better manner by means of an illustration. Suppose that sales are made to several customers—say to Smith, to Jones and to Black. The entries are made upon the journal in the ordinary manner. In extending the amounts into the columns, however, the figures representing the goods which these three customers have bought are put into debit columns of the set called "accounts receivable." Smith, Jones and Black have their own separate accounts in the ledger, to which these entries are posted in the usual manner. In addition to this posting, however, the footing of this column is posted to the general account in the ledger representing this class of accounts. In the same manner, if cash is received from customers, or if they are credited by goods returned, the items are extended into the credit column of the set called "accounts receivable," and are posted in detail to the respective personal accounts and in gross to the account representing the class. By this arrangement one account in the ledger shows the aggregate of transactions with customers, while all details are shown by the individual accounts with customers. The other account and the other set of columns are managed in precisely the same way and with corresponding results.



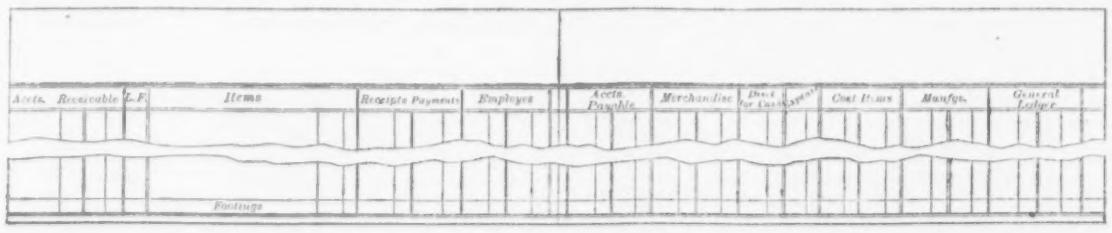
Foundry Bookkeeping.—Fig. 7.—Form for Time Book.

In this use of columns for the purpose of analysis and classification is the suggestion of a system which I have found of the greatest usefulness in every connection in which I have seen it tried, and it seems to me to be particularly suited to the founder's needs. The set of books to which I shall next call your attention is based upon it. The example of the use of columns upon the journal just described is only one of several ways in which they may be advantageously employed. For instance, the cash book may be dispensed with by simply providing two columns for cash items upon the journal. And here it is proper for me to say that I am proceeding on the idea that the journal is the book of original entry. I have already declared the ideal set of double-entry books to be one in which there is no copying or transcribing. I can see no necessity for employing a day book or blotter, the entries to be afterward copied from it into the journal. Experience has demonstrated that a book of original entry, particularly if provided with columns for the purpose, can be journalized without copying so as to admit of the proper posting of debits and credits. By providing a set of columns to receive the cash items, all cash entries may go upon the journal direct, and yet be arranged in such a manner as to admit of the balancing of cash the same as is done upon the ordinary cash book. Still another method in which columns upon the journal may be utilized is that of providing them to receive the items of nominal accounts, entries to which occur with great frequency, in order to post gross footings, thus saving much labor. For instance, a credit to merchandise would occur every time that goods are charged to customers. Instead of posting each of these items separately to the credit of merchandise account, by providing a column entitled "merchandise credit," and extending into it all the items of this character, the footings at the bottom of the page, or at the end of the day or week, may be posted in one sum, which, of course, is a material saving of labor.

So much for the theory upon which the journal is to be arranged. The particular form which I conceive to be of the greatest advantage for a set of foundry books is exhibited in the diagram to which I now call your attention (Fig. 4). On the left are provided two sets of columns, to which I give the general title of "resources"—meaning, of course, current resources. The first set of columns represents the cash items; the second set of columns represents accounts receivable. The management of these two sets of columns has already been sufficiently described to require no further attention at this time. The second division of the journal is the space provided for entries. It is ample in width, and is furnished with a single column, into which extensions may be put simply for the purpose of recording the amount of the transaction, without the necessity of stopping to extend the figures into the particular column in which they belong. This column might, with propriety, be termed a blotter column. The entries are made upon this book in any form whatever. A bookkeeper would be likely to enter them after the manner usual upon a journal of the double-entry system. Such form, however, is not essential, and all necessary results are obtained if the transactions are recorded after the fashion of single-entry books. The entries once made, journalizing consists simply of distributing the amounts among the several columns with which the journal is provided. The third division of the journal consists of two sets of columns, which are entitled "liabilities." The first pair of columns bears the name of "employees," and the second "accounts payable." In the general system the set of columns called "employees" must necessarily be a subdivision of accounts payable, the latter including the former. They are kept separate and distinct only for more complete classification. Next, to the right, is provided a double set of columns entitled "merchandise," the debit of which would receive all amounts representing the cost of the merchandise, invoices, freights, &c., and the credit of which would receive the figures representing sales. The next set of columns is entitled "cost items." Everything that concerns the cost of the manufactured goods belongs in these columns. For the sake of analysis it may be desirable to keep an account with pig iron, coal, labor, advertising, interest and discount, taxes, insurance, office expenses, &c. These accounts are opened in a portion of the ledger especially set apart for cost items, or, if you please, in a separate volume called cost ledger. They are all represented on the journal, however, by these sets of columns. The footings of the cost items columns are posted to a general account of the same name in the general ledger in the same manner as the footings of the "accounts receivable" column already described. The total cost to date of the manufactured product is always represented by the balance in this account, while an analysis of the cost may be obtained by an examination of the nominal accounts comprehended by it under whatever names they may be kept. The next set of columns I have entitled "manufactures," using this term, as already explained, to represent manufactured goods in contradistinction to the term "merchandise," which stands for goods that are bought again. There is both a debit and credit column provided. The credit column receives all items of sales; the debit column receives items of corrections, deductions, &c. Considering these last two sets of columns, viz., cost items and manufactures, together, it will be noticed that, in effect, one is the debit and the other the credit of the same thing. One represents the net cost of goods manufactured, and the other the net credits for goods sold. The last set of columns on the face of the journal is entitled "general ledger." All amounts of accounts which are opened in the general ledger are extended into these two columns, and, at the end of a day, week or month, as the case may be, when the footings of the other columns are posted, they are also extended into the general ledger columns, the footings of which will then balance.



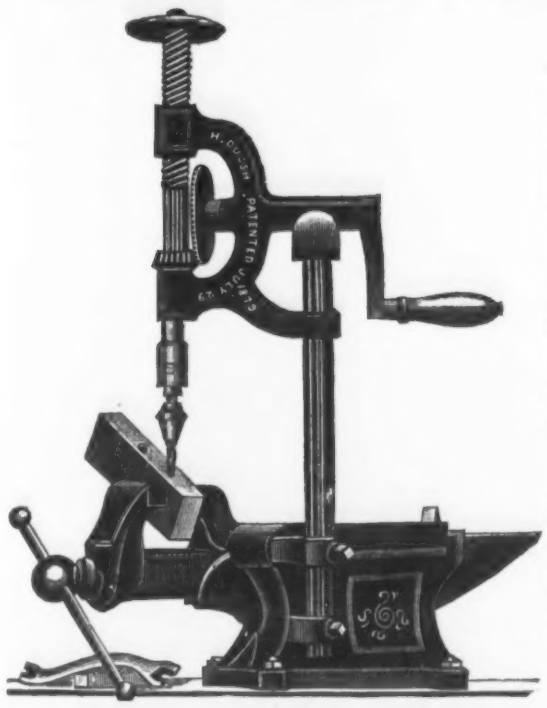
Foundry Bookkeeping.—Fig. 4.—The Form of Journal Recommended for the Books of a Stove Manufactory.



Foundry Bookkeeping.—Fig. 5.—The Form of Cash Book Required in Connection with the Journal above Illustrated.

By this description of the journal it will be seen that it is calculated for all the entries which occur in a business. As I have de-

ANVIL, VISE AND DRILL.



This machine was first made by a practical mechanic for his own use, and to meet a want which nothing in the market would fill. It was so highly regarded by all who saw it that he was minded to get it patented and manufactured for the market. When it was brought to our attention we saw at once its great utility, and bought the exclusive right for the whole United States. We believe it will come into general use as fast as its merits become known. The anvil face is 4x3 inches, and hight 6 inches. Width of vise jaw, 3½ inches; steel drill press, with adjustable chuck to hold ¼-inch drills, and all smaller sizes. The article to be drilled can be held firmly in the vise, so as to be drilled at any angle, or if it is too large for the vise it can be drilled on the anvil. The drill may be removed when not in use. Price for the whole, $18. Weight, 80 pounds. The vise and anvil are complete without the drill, and are sold for $10; weight, 60 pounds. For all jobbing shops, it is worth much more than it costs. Farmers can do with it many jobs which otherwise would have to be sent to the shops. All Hardware dealers who do not keep them in stock will furnish them on demand, or we will send them on receipt of the price.

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Price ⅜, 7-16, ½, all $1.75 per dozen.

A liberal discount to the trade. Send for a sample lot.

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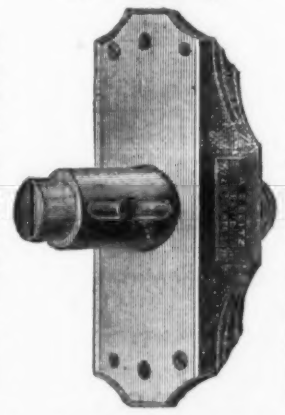
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Forged Horse Shoes,

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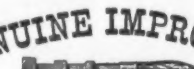
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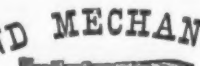
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The back thrust when in use borne by the SHANK instead of the Handle

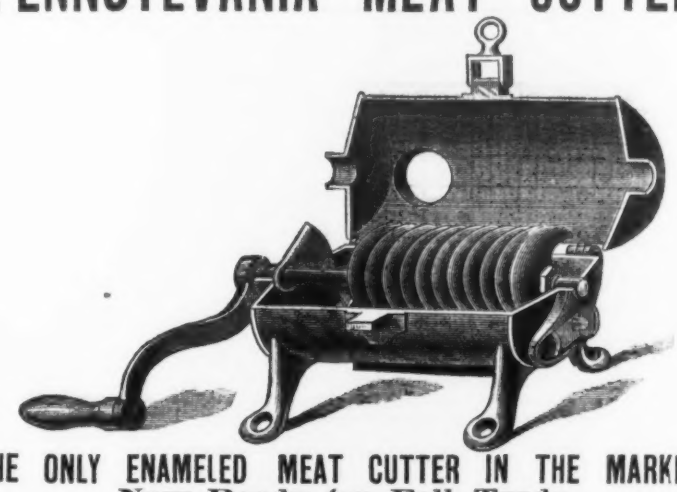
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No. 1, containing 8 Steel Knives, per dozen	$24.00
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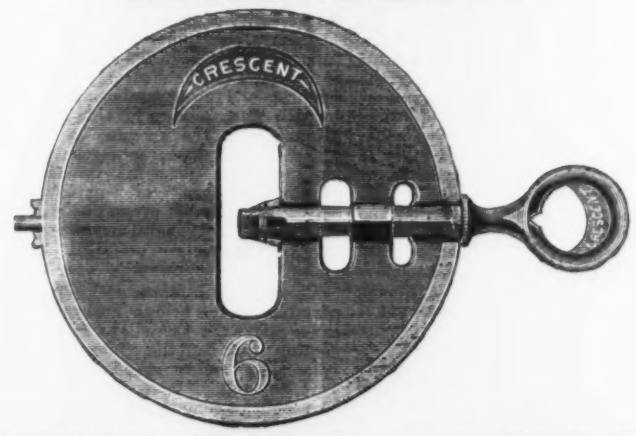
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STOVE PIPE DAMPER.

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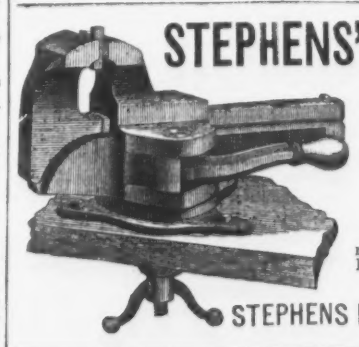
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No Small Pieces to Lose, No Spring to get Out of Order, No Nut to Work off.

This Damper consists of but TWO pieces—the STEM and BLADE—the parts being so constructed that when the former is inserted (either side up) it engages within a notch near its end and a raised catch formed on the blade, which effectually prevents the stem from working out while in practical use, and at the same time admits of its withdrawal by the application of a little extra pressure outward. The Damper is held in any desired position by the pressure brought to bear on the pipe between the shoulder of the handle and the ends opposite and around the pivot formed on the blade.

Owing to its simple construction, no directions for attaching are necessary.

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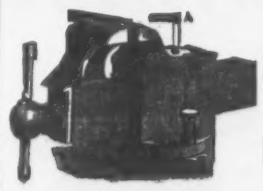
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Adapted to every variety of work, from jewelers' to locomotive works. Opens FURTHER, holds FIRMER, is HEAVIER and MORE DURABLE than any other Vise. For sale by the Hardware trade.

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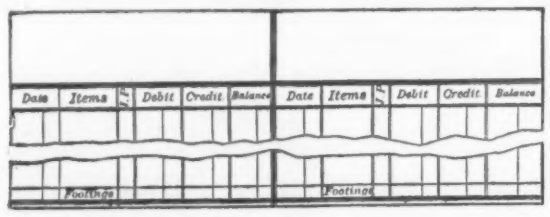
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scribed it, it is cash book, sales book and journal all in one. Such an arrangement might be very desirable in a small business, but would be altogether unsuitable for a large business. Accordingly, a cash book and sales book must be provided as parts of the general system we are describing. The principle upon which the cash book (Fig. 5) is arranged is essentially the same as that of the journal which I have just described. A set of columns are provided for receipts and disbursements, in which the ordinary balance may be struck for comparing with the cash on hand. The other columns upon it correspond with those of the journal with the exception of two extra ones, which are added simply in the way of labor-saving devices. It is quite a common practice now-a-days to make sales on time, with the privilege of a discount off for cash payment. As a statistical account of some importance, "discount for cash" is provided with a column in the cash book, into which the various items of discount are extended, and the gross of which is posted in due time to an account in the ledger called by the same name. The second extra column on the cash book is entitled "office expense," and is simply an example—a catch-all for the petty items of cash continually coming up, the posting of which in gross answers all necessary requirements. The cash book is auxiliary to the journal. All cash entries are made upon it. Its columns are footed at the end of the day's business, and these footings are entered



Foundry Bookkeeping.—Fig. 8.—Ruling Recommended for the Ledgers.

upon the journal, being extended into the columns of corresponding names. In case of the two extra columns just described, which are added to the cash book, the account names are entered upon the journal, and the amount extended in the cost-items column, in which by classification they belong. In posting, the items upon the cash book are posted direct. While it is tributary to the journal in the matter of its gross items, it is independent of the journal in its details. The sales book (Fig. 6) is arranged upon very much the same plan, being modified only so far as is necessary to adapt it to the purpose. In its general features it resembles any ordinary sales book, being supplemented, however, by columns representing the accounts, entries to which are made by means of it. There are three sets of accounts in the ledger which may be charged with goods, viz.: Accounts with customers, accounts with parties from whom goods are bought and accounts with employees: accordingly the sales book is provided with a debit column representing each of these classes. There are two accounts in the ledger to which credits may be made by means of the sales book. One of these is merchandise and the other manufactures, and columns are provided to represent them. There are also two accounts in the cost items to which credits are sometimes made upon the sales book, viz., "packing" and "cartage." For convenience, provide each of these accounts with a column on the sales book. The use of the sales book, therefore, is of the simplest kind. Entries are made in the manner customary with entry clerks, and amounts are extended at the time into the column called "extensions." At the close of the day's business the journalizing of sales s done by extending the amounts into their proper columns. If a stove, for example, has been sold to an employee, the amount of the debit goes into the column called "employees' column," while the credit goes to "manufactures." If goods have been sold to a party from whom the concern buys goods and whose account is therefore known as an account payable, the debit is extended in the column called "accounts payable," and the credit is placed either in merchandise or manufactures, as the case may be. Likewise all sales made to customers are extended in the column called "accounts receivable," and the credits distributed as they belong. Personal accounts are posted directly from the sales book to the ledger, while the footings of columns at the end of each day are transferred to the journal, thus making the relationship between the sales book and the journal exactly the same as between the cash book and journal.

A very important set of accounts in every manufacturing business are those with its employees. It is frequently the custom to organize a set of books, outside and independent of the regular books, by which to keep accounts of the amounts earned by a id of the cash paid to employees. I think, however, that the employees' account should be made a part of the general system of the establishment. Let a time book of the ordinary form be provided (Fig. 7)—first, with a column for the ledger folio or post mark: and second, with a column for the total earnings, and alongside of it a column for the amount of cash paid. At the end of the week the total earnings are figured up and extended in the column of corresponding name. Each man is credited upon the ledger with the amount of his earnings, while the total earnings of all the employees are transferred to the journal, and are placed to the credit of the columns called "employees." In like manner, when cash payments are made, they are debited to the men individually, and the gross is entered upon the cash book to the debit of the column entitled "employees." So much for the journal and the books which are tributary to it, or, rather, which are in reality sub-divisions of it. Let us now consider the ledger, or, rather, we will say ledgers, because for convenience it is well to have that book bound in several volumes.

First, we have what is called the "general ledger," the accounts in which are but very few. For example, capital stock, reserve fund, accounts payable, cash, accounts receivable, foundry property, merchandise, cost items and manufactures. The entire business is summed up in these accounts. Next, we have of the subdivisions "accounts receivable ledger," in which are opened up all the accounts with the customers of the concern. In this ledger are to be found the details of what is shown in gross in the general ledger by the account called "accounts receivable." Next, we have "accounts payable ledger," in which, in like manner, are to be found the details of that which is represented in gross in the general ledger under the name of "accounts payable." As a subdivision of accounts payable ledger, this subdivision being made only for the sake of convenience, we have an employees' ledger, in which all the accounts with employees are kept. In accounts payable ledger is a general account, called "employees," which represents in gross what employees' ledger shows in detail. And last, we have a ledger which I call "cost items ledger," in which are opened up those statistical accounts, under as many different heads as may seem necessary to maintain a satisfactory analysis of the business, which are required in determining cost of product, and which are useful in comparing one season's business with another. While in an extended business it would be desirable to have the ledger bound in several volumes, as I have described, in a small business equally satisfactory results may be obtained by having it all in one, or, perhaps, two volumes, there simply being certain portions set apart for the different classes of accounts I have described. The system is quite elastic, and any modification of this character, made to adapt it to circumstances, does not affect the general result.

In passing, I would direct attention for a moment to the ruling of the ledgers. Instead of the old-style ledger, in which the debit occupied one-half of the page and the credit the other half, I much prefer the style of ledger sometimes called a bank ledger (Fig. 8), in which but one-half of the page is used for an account, the debit and credit column being side by side, and a third column being provided for a balance. I would use this style of ledger throughout. Trial balances should be taken from the books at stated intervals and should always be taken by balances rather than by footings. Whenever a balance is ascertained in this manner, let it be extended into the third or balance column and marked either debit or credit, as the case may be. A record of this kind in accounts is very desirable. Whenever the managing man of a concern picks up the ledger, whether it be the account of an employee or a customer or a nominal account he is examining, an exhibit of the balances at stated intervals always affords him data by which to arrive at conclusions without the necessity of performing calculations.

A word with reference to trial balances from such a set of books as I have described. The general ledger is always in balance, and comprehends the entire business. The ledger entitled "accounts receivable" will always balance with the account in the general ledger called "accounts receivable." In like manner, "accounts payable ledger," "cost items ledger," and "employees ledger" may at any time be proven by a comparison with the several general accounts with which they correspond.

The Ottawa River Bridge.—The importance of the bridge across the Ottawa River above the Chaudiere Falls, as a connecting link of the Ontario and Quebec systems of railways, affording, when the Toronto and Ottawa sections shall have been built, a competition line to the Grand Trunk Railway, is universally recognized. It is eighteen months since work was commenced on the bridge, and a few weeks more will see trains passing over it. The approaches to it are extensive. On the Ontario side the distance from the bridge to the junction of the Canada Central Railway is 45,000 yards, and on the Quebec side 7500 yards, to the railway track. This entire distance has had to be filled in, besides 35,000 yards of filling on the Lemieux Island, on which the two sections of the bridge connect. The embankments are protected from the water by "rip-rap" work. There are eleven piers and four abutments. Five are on the Ontario side of Lemieux Island, and six on the Quebec side. The piers are of solid masonry, and are 8 feet by 24 feet at the top, and varying from 23 feet to 33 feet in hight, according to the depth of the channel. The roadway of the bri ige is 10 feet above the hight of the highest flood known on the river. On the Quebec side of Lemieux Island there are six spans of 158 feet each, and one of 258 feet, and on the Ontario side five spans of 158 feet each, and one of 168 feet—a total of 2164 feet of bridgework, or about one-third of a mile, making it the second longest bridge in Canada. The superstruction is now being erected by Messrs. Clarke, Reeves & Co., of Phœnixville, Pa. Mr. Beemer had the contract for the approaches, abutments, piers, &c. The total cost of the bridge will be $360,000, Mr. Beemer's contract covering $112,000, and Messrs. Clarke, Reeves & Co.'s $200,000. This leaves a margin of $50,000 for extras. The duty on the bridge amounts to $28,000, there being some 1500 tons of iron.

Philadelphia is officially reported to be using about 56,000,000 gallons of water daily, but a writer in the Philadelphia *Record*, who seems to be well informed, contends that the amount actually pumped does not exceed half of this amount, and he cites figures to prove his statements.

A strike of 28,000 nail makers of East Worcestershire and Staffordshire began recently in opposition to any further reduction of their wages, which, they allege, have already been reduced 20 per cent.

PITTSBURGH CHAIN COMPANY,

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In addition to our current prices on Chains, we invite attention to the superior quality of our manufactures, every care being taken to secure good, reliable work.

OUR TESTING MACHINE.—Every Chain is tested by a Compound Dead Lever Machine, of the latest and best improved pattern.

OUR PLANT is the largest for the purpose in the country, and fitted with all the latest improved appliances for reducing expense of manufacture.

OUR WORKMEN.—As our works run steadily the year round, we are enabled to select and retain the best workmen in the trade, which, in connection with our Testing Machine, insures a uniformly good quality of Chain.

OUR CHAIN.

BEST PROVED—Is made of best refined iron, tested to Admiralty Proof, and carefully examined before shipment.
BEST CRANE—Is made of best refined iron, tested to 10 per cent. above Admiralty Proof, and carefully examined before shipment, special attention being given to finish and uniformity of links.
SPECIAL B. B. CRANE—Is made of special low steel (prepared expressly for the purpose) by picked workmen, tested to 50 per cent. above Admiralty Proof, carefully examined, and is in every respect a superior chain. This chain is especially recommended for Dredges, Cranes, Mining, &c., and is warranted to outwear from 2 to 4 chains of any other make.

QUALITY IS OUR SPECIALTY.

PITTSBURGH CHAIN CO.

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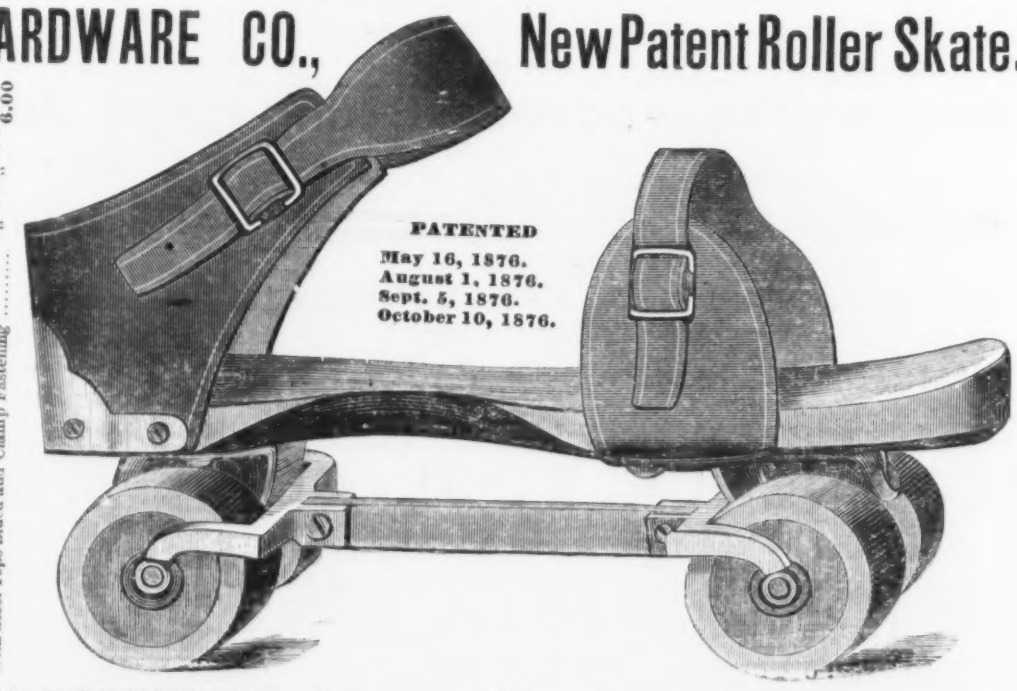
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Manganese.
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Measuring Tapes.
Eddy Geo. M. & Co., 353 Classon Ave., Brooklyn, N.Y.10
Meat Chopping Machinery.
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Metals.
Dickerson, Van Dusen & Co., 29 and 31 Cliff, N. Y.. 2
Goldsmith Moses & Son, Charleston, S. C.....3
Naylor & Co., 99 John, N. Y.....30
Northrop A. C., Waterbury, Conn.....2
Phelps, Dodge & Co., Cliff, bet. John & Fulton, N.Y. 2
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Purves A. & Son, cor. South and Penn, Phila.....13
Quincy J. W., 98 William, N. Y.....4
Read D. W. R. & Co., 205½ Walnut, Phila.....5
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Starr John, Halifax, Nova Scotia.....7
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Booth, Garrett & Blair, 919 Chant, Philadelphia....5
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Peckham J. S. & M., Utica, N. Y.....21
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Mineral Paint.
Chattanooga Mineral Paint Works.....6
Mineral Wool.
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Hall, Elton & Co., 75 Chambers, N. Y.....11
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Everhart Jas. M., Scranton Pa.....38
Pocket Knives.
Boker Hermann & Co., 101 Duane, N. Y.....28
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Ideal Coffee Pot Co., Philadelphia, Pa.....24
Purvis R. C., Philadelphia.....21
Sundry Mfg. Co., Buffalo, N. Y.....
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Dienelt, Eisenhardt & Co., Philada., Pa.....36
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Clark, Widdifield & Co., Cincinnati, O.....
Mohawk & Hudson Mfg. Co., Waterford, N. Y.....6
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Rumsey L. M. & Co., St. Louis, Mo.....34
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Cambria Iron Co., Johnstown, Pa.....5
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Townsend W. P. & Co. Pittsburgh, Pa.....35
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Farrel Foundry and Machine Co., Ansonia, Conn..34
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Garrison A. & Co., Pittsburgh, Pa.....6
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Stanley Rule and Level Co., 29 Chambers, N. Y.....3
Sad Irons.
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Enterprise Mfg. Co., Philadelphia.....27
Sand and Emery Paper, *Makers of.*
Baeder, Adamson & Co., 730 Market, Philadelphia..
Saws, *Makers of.*
Boynton E. M., 80 Beekman, N. Y.....38
Disston Henry & Sons, Phila.....32
Gerlach Peter & Co., Cleveland, Ohio.....
Wheeler, Madden & Clemsen Mfg. Co., Middletown, N. Y.....22
Scales, *Manufacturers of.*
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Charillon John & Sons, 91 Cliff, N. Y.....26
Howe Scale Co., Rutland, Vt.....11
Olsen Tinius & Co., Philadelphia.....21
Rienle Bros., 9th above Master, Phila.....21
Weeks & Ray, Buffalo, N. Y.....25
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Miles P. S., 205 Quarry, Phila.....13
Philadelphia Screw Co., Philadelphia, Pa.....11
Screw Cutting Machinery.
Wiley & Russell Mfg. Co., Greenfield, Mass.....37
Screw Drivers. *(Improved) Makers of*
Disston Henry & Sons Phila.....32
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Ross, W. K., 97 Chambers, N. Y.....
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Sellers Wm. & Co., Phila. and 79 Liberty st., N. Y..37
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Reed Hardware Co., Bridgeport, Conn.....10
Shears, Iron.
Cleveland Hardware Co., Cleveland, O.....34
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Shears (Sheep).
Field Alfred & Co., 93 Chambers, N. Y.....10
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Skates.
Union Hardware Co., 87 Chambers, N. Y.....23
Smelting Works.
Philadelphia Smelting Co., 12th and Noble sts., Philadelphia.....
Reeves Paul S., 700 South Broad, Phila.....38

LABOR AND WAGES.

Owing to the increased work in the locomotive department of the Reading Railroad, 40 of the machinists who had been suspended about a month ago have resumed work. A number of the suspended carpenters have also been given work.

The Hazleton *Sentinel* remarks: After seven months of half-time work at the collieries, it will be an interesting and useful task to note how full time and increased production from all the regions will operate on the market and the general business of the State.

By the terms of a recent agreement at Pittsburgh, the price of muck rolling will be one-eighth the price per ton paid for boiling, and one-half the wages of the blooming boys additional, when such boys are employed. Heretofore, at some of the mills, the rollers have been paying the wages of the blooming boys.

The trouble at Corning, Ohio, among the coal miners has grown serious. Arms and ammunition have been placed in the hands of the miners who have taken the place of the strikers, and there may be serious trouble. The new men are colored.

Boys are beginning to find that their day for controlling glass houses is at an end. The carrying-in boys at Campbell, Jones & Co.'s, Pittsburgh, who struck last week for higher wages, were soon convinced that they had made a mistake, and would have been glad to go to work again, but their places had been filled and they were "left out in the cold." The firm have fire in their second furnace, and will have glass from it in the course of ten days.

Mr. Jos. Bishop, formerly president of the Amalgamated Association, and who resigned to accept a situation as puddle boss at the Sharpsburg (Pa.) mill, has now retired from the latter position.

The laborers at the Mingo Furnace, Steubenville, Ohio, went on a strike last week for 15 cents a day advance—from $1.10 to $1.25.

The coal miners of Western Pennsylvania held a meeting last week to consider the best means to achieve uniformity in the matter of weighing coal and to make the employment of check weighmen uniform at all tipples. To do this it is proposed to ask operators to co-operate.

The miners at the Rolling Mill Shaft, Steubenville, Ohio, have been on a strike 15 weeks.

The coke drawers at Averick's Shaft, Steubenville, have struck for an advance.

It is reported that the coal miners on the railroads of Western Pennsylvania have instructed their secretary to open negotiations looking to arbitration again. After the experience of a year ago the operators will desire to know just what the miners mean.

The Pittsburgh Forge and Iron Company make the following statement concerning the close of the three months' strike at their works: The strike at our works was on a demand that we take Reily back into the forge, from which he was discharged; but, while we resisted that demand, we stated at a meeting held with the representatives of the Amalgamated Association, in June, that we had no objection to his going to work in the mill to fill any vacancy that might exist, but we would not take him back into the forge. The proposal, which was undoubtedly made in a spirit of compromise, but substantially accomplished the object we had in view, was accepted at that meeting. It was agreed that the works should be started, and an offer was made to go down that night and notify the men to go to work the next day. But it was then past the middle of the week; we were busy with our inventory, and stated that any time prior to the end of the week would answer just as well. We were much surprised to find that the arrangement was not put into effect. No official notice of any change was given to us, and we were left without any explanation until, by a chance encounter on the street some time after, we were informed that we must take Reily back into the forge. Matters have remained thus until last week, when the men accepted our original proposition to allow Reily to go to work in the mill, and having a situation on a heating furnace vacant, it was given to him.

The report that the Jefferson Nail Works, at Steubenville, Ohio, have shut down on account of the coal strike is incorrect. They are getting coal from other pits, and are running.

One day's pay of an average workingman ($1.25) will meet the charge of transporting from the West to the East (1000 miles), food enough to maintain him a year. That is to say, one day's work annihilates the disadvantage of the distance of the Illinois prairies, and brings them to his neighborhood; while the vast advantages of the East over the West would be cheaply bought with the work, not only of many days, but of weeks.

The Knights of Labor were in session last week at Pittsburgh. They claim a membership of 500,000, scattered through 34 States, the bulk being in the 364 "assemblies" in Pennsylvania.

The miners employed in the Pittston Company's Seneca Colliery, at Pittston, Pa., struck on the 6th inst., owing to the dissatisfaction in weights. About 200 men and boys are idle.

A dispatch from Paris states that a large oil district has been conceded to H. W. C. Tweddle, Pittsburgh, Pa., by the Russian government. The oil wells are in the Couban district, which is considered to be very rich. It was stated at the Petroleum Exchange that Mr. Tweddle has long been working for the contract of the oil business of Russia, and about six years ago he proposed to drill oil wells and build pipe lines for the bringing of oil from the Caspian Sea to the Black Sea. It is claimed that he has struck light crude oil at a depth of 200 feet, of a specific gravity of .794, and 48° B. If this is the case it is unprecedented. It was stated by an exporter that the heavy oil discovered by Mr. Tweddle would only be fit for lubricating purposes.

FOR SALE.

From 500 to 1000 tons good Neutral Muck Bars, 4 in. and 5 in., by
ALAN WOOD & CO.,
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TELESCOPE TUBES.

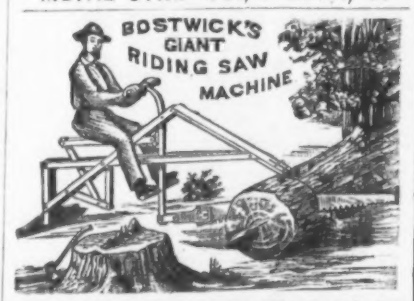
Fine Mandrel-drawn Tubes, from Brass or German Silver. Tubes for sliding one within the other made to order. Manufactured by ROBT. T. DEAKIN & CO., 500 N. 12th St., Philadelphia, makers of the American Improved Brass Garden Syringe.

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Metallic Binding Strips,
For Oilcloths, Carpets, &c.



Is made from polished Brass, beautifully chased, with curved edges that fit neatly over the edge of the fabric. It makes an elegant finish as a binding for oilcloth under fine heating stoves. Made in 1, 1¼, 1½ and 2-yard lengths, or any length desired. Price, 10 cents per yard; discount 40. Will allow one-half express charges on a 100-yard sample order.

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The Great Success of the Wonderful Improved Labor-saving BOSTWICK'S GIANT RIDING SAW MACHINE is fully demonstrated by the large number in use and present demand. It saws logs of any size. One man can saw more logs or cord wood in one day, and easier, than two men can the old way. It will saw a 2-foot log in three minutes. Every farmer needs one. Township agents wanted. Send for illustrated circular and terms.
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Manufacturer of
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Send for revised catalogue.
19 Ann Street. New York.

PATENTS.

THOMAS D. STETSON, 23 Murray St., N. Y.,
Patent Solicitor and Expert.

Cary's Wardrobe Hook.



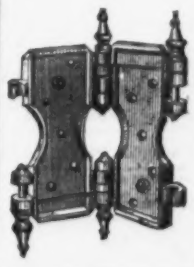
Patented March 26, 1872.
Patented July 27, 1880.

ITS ADVANTAGES ARE:

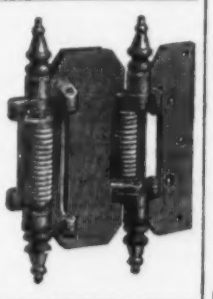
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The bar presents a wide bearing, on which clothing may be hung without drawing it out of shape.

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BOSS MOLASSES GATE.

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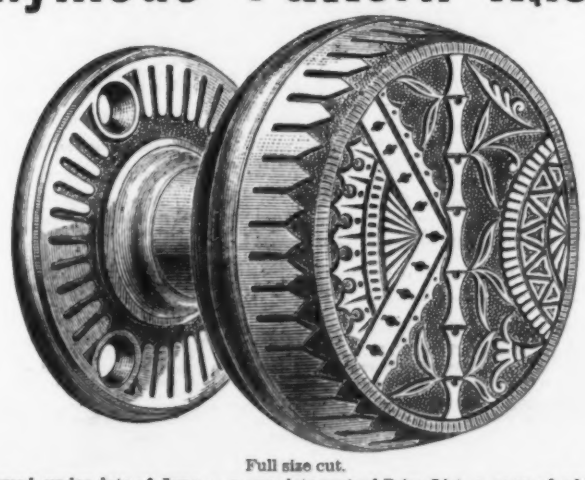
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Full size cut.

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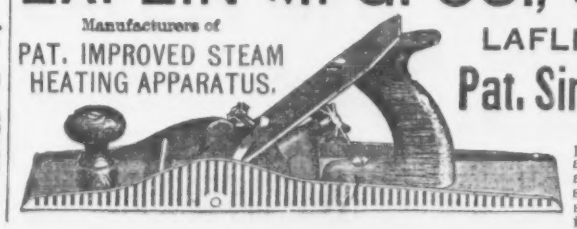
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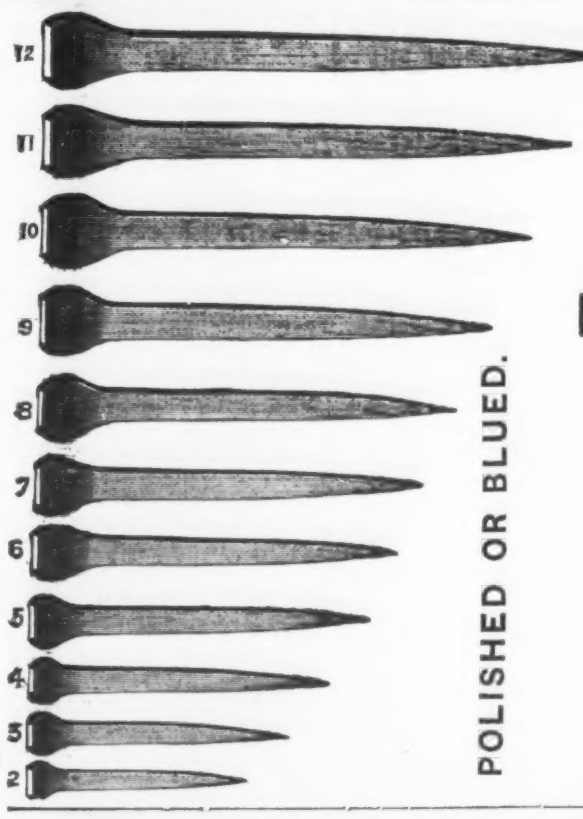
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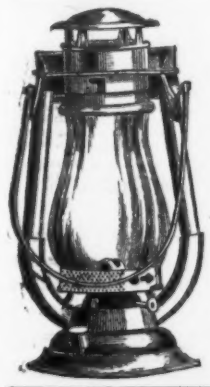
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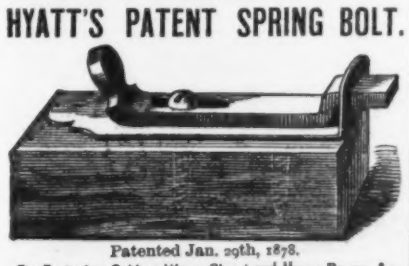


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L. JEFF. SPRENGLE,

Sole Manufacturer,

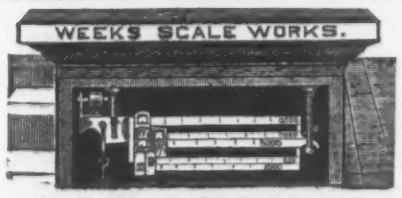
Ashland, Ohio.

Who would do without it for $1.50.

The platform does not go with the holder it is; extra if wanted.

NEW MAKE OF MINE LAMP.





562 Washington St., Buffalo, N. Y.

½ ton, with Single Brass Beam, Platform 8 x 14 ft., $60
6 " " " 8 x 16 ft., 90

Larger sizes proportionately low in price. Extra for Double Brass Beam, $5; for Weeks' Patent Combination Beam, brass, nickel plated, $10. Order of us and save expenses of agents and commissions. The cheapest, and with Combination Beam the best Scale in the market. Every scale warranted accurate and durable.

WEEKS & RAY, Proprietors.



The Improved Eclipse Fan Blower.

With Lever or Crank Motion.

SHOP PRICES.

	No. 1.	No. 2.
Improved "Eclipse" Fan Blower and Tuyere Iron, complete	$17.00	$13.00
Improved "Eclipse" Fan Blower, without Tuyere Iron	25.00	16.00
Improved "Eclipse" Fan Blower, complete, with Lever Attachment	30.00	20.00
Improved "Eclipse" Fan Blower, without Tuyere Iron & with Lever At'chm't	27.00	18.00
Tuyere Irons alone	3.00	2.00

The above includes a Patent Adjustable Elbow and Pipe, Oil Can, &c.

Exhausters for ventilating mines, complete	28.00	20.00

Full printed directions for working accompany every machine.

EZRA F. LANDIS,
Sole Manufacturer, Lancaster, Pa.



KEYSTONE Portable Forges,

All sizes, for the lightest to the heaviest work, run by Chain Gear and Flat Belts. Strong blast and durable. Send for Catalogue and Price list to

KEYSTONE Portable Forge Co.,
220 Carter St., Philadelphia, Pa.

WM. S. CARR & CO.



Sole Manufacturers of

CARR'S PATENT Water Closets,

PUMPS, CABINET WOOD WORK, &c

106, 108 & 110 Centre Street,
Factory, Mott Haven, NEW YORK.

COBB & DREW

Plymouth, Mass.,

Manufacturers of Copper, Brass and Iron Rivets; Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk, Clout and Cigar Box Nails, &c. Rivets made to order.

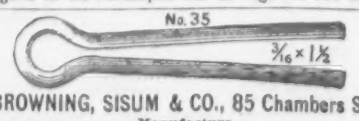
NEW YORK AGENCY,

GEORGE G. GRUNDY,

HARDWARE,

165 GREENWICH STREET,

Agents for the Philadelphia Star Carriage and Tire Bolts.



BROWNING, SISUM & CO., 85 Chambers St., Manufacture

Belt Hooks, Cotters, Spring Keys, D Rings, Staples, and everything pertaining to wire beading.
Factory, BROOKLYN.



THE GIANT PAD LOCK.

Manufactured by

THE SMITH & EGGE MFG. CO.

(Centennial Award.)

"Superior in Every Respect."

This is one of the **best selling Locks** in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted.

Orders solicited. Address as above

Lock Box 1705, Bridgeport, Conn.

STAR LOCK WORKS.

ESTABLISHED 1836.

Trunk Locks,
Pad Locks,
Dead Latches,

Door Springs,
Trunk Stays,
Keys, &c., &c.

110 South 8th St., and Sansom, bet. 8th and 9th, PHILADELPHIA.



PATENTED

Scand. Pad Locks

With Flat Keys.

Shackel secured to the Lock Box.

HILLEBRAND & WOLF.



Do your own Printing

$3 press for cards, &c. Self-inker $4. Larger sizes for business use, pleasure, boys. Type setting easy by printed instruction. Great money saver and money maker. Send two stamps for Catalogue of Presses, Type, &c., to manuf'rs, KELSEY & CO., Meriden, Conn.

ORNAMENTAL IRON WORKS.

DAVID PETTIT & CO.,

Manufacturers of

Patent Wrought Iron Fences,

For Public or Private Buildings and Cemetery Lots. Also, Galvanized Tubing, Gates, Ornaments, Settees, Chairs, Vases, &c., for cemetery lot inclosures.

S. w. cor. Twelfth & Noble Sts., Philadelphia.

J. STEVENS & CO.,

Chicopee Falls, Mass., P. O. Box 224,

Manufacturers of

SPRING CALIPERS & DIVIDERS.



Also, surface Gauges and Counter Sinks, Stevens' Patent Breech-Loading Sporting Rifles, double and single barrel; Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunters' Pet Rifles. Our Shooting Gallery Rifle is the favorite everywhere.

Grant Fan Mill & Cradle Co.

Manufacturers of

Grant's Grain, Coffee, Rice, Cochineal and Pimento Fans,

and

TURKEY WING GRAIN CRADLES, 4, 5 and 6 fingers.
GRAPE VINE GRAIN CRADLES, 4 fingers.
SOUTHERN PATTERN GRAIN CRADLES, 4, 5 and 6 fingers.

All of a superior quality. None genuine unless marked *Grant Fan Mill and Cradle Co.* Send for illustrated catalogue and price list.

P. O. Address,
MELROSE, Rensselaer Co. N. Y.



OTIS A. SMITH,

ROCKFALL, CONN.,

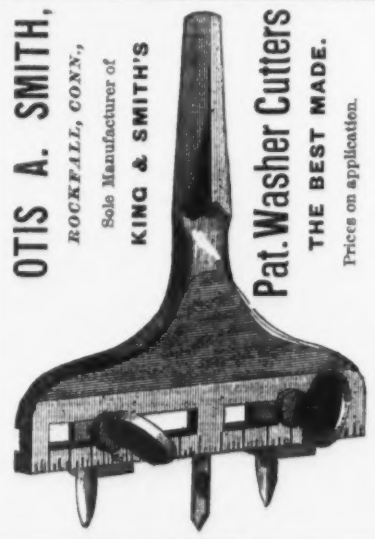
Sole Manufacturer of

KING & SMITH'S

Pat. Washer Cutters

THE BEST MADE.

Prices on application.



Thos. C. White & Co.

Manufacturers of

BUILDERS' HARDWARE,



No. 50 Central Ave.
CINCINNATI, O.

Sole Agents for

HUME'S CHALLENGE **Gate Hinge and Latch**

Patented Nov. 25, 1879.

Send for Price List.

All goods guaranteed as represented.



VERMONT SNATH CO.,

Manufacturers of

Pat. Swing Socket Snaths

and also a large variety of other styles of Snaths

Springfield, Vermont.

Represented in New York by Lamson & Goodnow Mfg. Co.

WHITWELL HOT BLAST STOVES.

600 IN USE.

Witherow & Gordon,

Sole Agents U. S.,

173 WOOD STREET,

PITTSBURGH, PA.,

Blast Furnace Engineers, Machinists and Contractors.

THE SLAYTON RAZOR.



PERFECTION For Portability. For Cutting Quality For Temper.

Handles of German Silver, Nickel Plated. Blades of the Finest Steel in the World. Every Razor Fully Warranted.

L. C. TOWER, Thermometer Manufr.,
39 Exchange St., Rochester, N. Y., Sole Agent.
Canvassers wanted. Sample by mail, $1.



The Buckeye

Upright Drill Press

Is the cheapest and best made. Price, $15 Weighs 65 pounds. Discount to the trade. Send for circular to

A. E. Folger & Co.,

Springfield, O.

JAMES COMLY,

4739 Paul St., Frankford, Philadelphia, Pa.,
Manufacturer of



Hardware Novelties, Glass Cutters, &c.

S. CHENEY & SON.

Manlius, N. Y.,

Small Gray Iron Castings.

We warrant our work for smoothness and finish.

New York Wholesale Prices, September 15, 1880.

HARDWARE.

Anvils.
Eagle Anvils American; ..... ₱ lb 10c dis 20 %
Wright's..... 10½c @ 11c
Armitage's Mouse Hole..... 9½ @ 9¾c
Trenton 10½c

Anvil, Vise and Drill.
Millers Falls Co., $28.00..... dis 20 %

Augers and Bits.
Conn. Valley Mfg. Co.....
Douglass Mf. Co.....
Humphreysville Mfg. Co .....
ves..... dis 40 %
Beecher (French, Swift & Co)..... from list of Jan 7. 1880.
Griswold.....
Nobles Mfg. Co.....
Kasson's Patent.....
Cook's, Douglass Mfg. Co..... dis 40&10 %
Snell Mfg. Co s C. S. Augers..... dis 40 %
" B. Machine..... dis 40 %
" C. S. Bits..... dis 40 %
" Jenning's Bits..... dis 35 %
Patent Solid Head..... dis 30 %
Lewis' Patent Single Twist..... dis 33⅓
Russell Jennings' Auger Dowel, Machine-Dowel and Hand-Rail Bits..... dis 10&10&10 %
Russell Jennings' Augers..... dis 10&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers dis 25&10&10&10 %
Imitation Jenning's Bits..... dis 40@45 %
Ives' "Jennings" Bits..... dis 33⅓&10 %
Andrews Bits..... dis 40 %
Expansive Bits, Clark's, small, $18; l'ge, $26... dis 25 %
" Ives..... $20 @ $30—dis 33⅓ %
" Blake's..... $20—dis 40 %
" " Parmelee's..... $20 and $30 ..dis 33⅓ %
Hollow Augers Ives' ..... dis 15 %
" " French Swift & Co .....
" " Douglass .....
" " Bonnev's Adjust.. ₱ doz $48—dis 25&10&10 %
" " Stearns' Adjust., ₱ doz $48—dis 20&10 %
" " Ives' Expansive ...each $4.50—dis 30 %
" " Univ'sal Expansive, each $4.50—dis 20 %
Woods..... dis 25 %
Gimlet Bits..... $7.00 ₱ gross. dis 45 %
" Diamond..... ₱ doz $1.10 dis 20&10 %
" 'Bee"..... dis 35&5 %
Double Cut Gimlet Fits Shepardson's..... dis 40 %
" " Ct. Valley Mfg. Co...dis 30&10 %
" " Hartwell's..... dis 60&10 %
" " Douglass'..... dis 40 %
" " Ives'..... dis 50 %
Morse's Bit Stock Drill..... dis 25 %
L'Hommedieu's Ship Augers..... dis 15 %
Watrous Ship Augers..... dis 15 %
" Extension Lip..... dis 30 %

Awl Hafts.
Sewing Brass Ferrule..... $3.50 ₱ gross—dis 40&10 %
Peg " ..... 3.50 " dis 40&10 %
Patent Sewing, Short..... $1.00 ₱ doz—dis 40&10 %
" Long..... $1.40 ₱ doz—dis 10 %
Patent Peg Plain Top..... $10.00 ₱ gross—dis 40&10 %
" " Leather Top..... 12.00 " dis 40&10 %

Awls, Brad Sets, &c.
Awls Sewing, Common..... ₱ gross $1.70—dis 25&10 %
" Shouldered Peg..... ₱ gross 2.45—dis 25&10 %
" Patent Peg ..... ₱ gross .63—dis 25&10 %
" Shouldered Brad..... ₱ gross $2.70—dis 25&10 %
" Handled Brad ..... $7.00 ₱ gross—dis 20&10 %
" Handled Scratch ..... $7.00 ₱ gross—dis 20&10 %
Socket Scratch..... $1.00@$1.25 ₱ doz—net
Brad Sets, Aiken's..... ₱ doz $12.00—dis 45&10 %
" No. 42, $10.50; No. 43, $12.60.. ..... dis 70 %
" Stanley's Excelsior, No. 1, $9.00.... dis 20&10 %
" " " No. 2, 4.80... dis 20&10 %
" " " No. 3, 7.80... dis 20&10%

Axes.
Single Bit, 4½ to 5¼ and under..... ₱ doz $11.00 net
" 4½ to 6 and over..... ₱ doz $12.50 net
" Beveled..... 50 c ₱ doz advance
Double Bit, 4½ to 5¼ and under..... ₱ doz $22.00 net
" 5¾ to 6 and over..... ₱ doz $23.00 net
" " Beveled..... $1.00 ₱ doz advance

Axle Grease.—Frazer's..... ₱ lb 6c

Bag Holders.
Sprengle's Patent, per doz. $18..... dis 40 %

Balances.
All Spring Balances..... dis 15&10 %

Bells.
Hand, Light Brass..... dis. 60&10 %
" Extra Heavy..... dis 45 %
" White Metal..... dis 60 %
" Silver Chime..... dis 20&10 %
Glove (Cone's Patent)..... dis 25&10 %
Gong, Abbe's..... dis 25&10 %
" Yankee..... dis 30&10 %
" Barton's..... dis 30&10 %
Crank Taylor's..... dis 25&10 %
" Brook's..... dis 40&10&2 %
" Cone's..... dis 10 %
" Connell's..... dis 35 %
Lever, Sargent's..... dis 60&10 %
" Taylor's Bronze or Plated Lever..... net
" " Japanned Lever..... dis 25&10 %
" R. & E. M. Co.'s..... dis 40&10&2 %
Pull, Brook's..... dis 40&10&2 %
" Western..... dis 25&10 %
Call..... dis 25 %
Cow, Common Wrought..... dis 40&10&10 %
" Western..... dis 20&10 %
" Sargent's new list..... dis 40&10&10 %
" Kentucky "Star"..... dis 20&10 %
" " Sargent's new list..... dis 40&10&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog } dis 50 %
$12.00 10.00 9 00 8.00 6.00 5.00 3.50 2.50 5.00, }
Texas..... dis 30&10

Bellows.
Blacksmiths', Common..... dis 45 %
" Extra and Pittsburgh Pattern....dis 20 %
Moulders ..... dis 25 %
Hand Bellows..... List of Dec. 1, 1879, net

Belting, Rubber.
N Y. Belting and Packing Co..... new list net

Bit Holders.
Extension, Barber's..... ₱ doz $15.00—dis 40&5 %
" Ives'..... ₱ doz $15.00—dis 40 %
Diagonal..... ₱ doz $21.00—dis 40 %
Angular..... ₱ doz $24.00—dis 40 %

Blind Adjusters.—Domestic....₱ doz $3.00, dis 15 %

Blind Fasteners.—Mackrell's..... dis 30 %
Van Sand's..... No. 2000, per gross. $10.00... dis 15 %
" old pattern..... ₱ gross. $9.00 net
Washburn's Patent..... ₱ gross $16.50 net
Merriman's..... new list ne
Mackrell's..... ₱ doz. pairs, $0.65, dis. 10 %

Blind Staples.
Barbed, ⅜ in. and larger..... ₱ lb 12c net
" ⅜ in..... ₱ lb 16c net

Blocks.
Differential Pulley Blocks..... dis 20 %
Penfield Block Works, Rope and Iron Strap'd..dis 40 %
Wrot. Iron Com. bushed.dis 25 %
all steel roll'r.dis 10 %
Sheaves dis 35 %
Stanley R. & L. Co. Rope and Iron Strap'd .. dis 40&10 %

Bolts
Cast Iron Barrel, Shutter, &c..... dis50&10 %
Cast Iron Chain .Sargent's list)..... dis 60&10&10 %
Hugh's Lever and Chain Bolts..... dis 40%
Ives' Pat. Door Bolts,..... dis 40 %
Wrought Barrel..... dis55&10 %
" Square ..... dis 55&10 %
" Shutter, all Iron. Stanley's list....dis 50&10 %
" " Brass Knob, " " ....dis 20&10 %
" " Sargent's list..... dis 55&10 %
" Sunk Flush, sargent's..... dis 60½&10 %
" " Stanley's..... dis 40&7½%
" B.K.Flush. Com n. Stanley's..... dis 50&6 %
" " Ex. Heavy. " ..... dis 40&10 %
" Plated Knob & Slide Flush ..dis 50&2½ %
Carriage and Tire, Common..... dis 75&10 & 80 %
" " Philadelphia, new list..... dis 55 %
" " Philada. Pattern....dis 70 @ 70&10 %
Shelton's ..... old list, dis 50&10 %
R. B. & W. Carriage (old list)..... dis 60 %
Tire, Am. Screw Co.'s Phila, new list, Nov 1, '79, dis 60 %
" Bay State ..... dis 50 %
" R. B. & W., new list..... dis 60 %
Stove—American Screw Co.'s..... dis 37½ %
" R. B. & W..... dis 40 %
Plow..... dis 40 %
" R. B. & W..... dis 40 %
Machine..... dis 65 %
Bolt Ends " ..... dis 45&50 %

Borax..... 11@12½c ₱ lb net

Boring Machines. Upright. Anguisr.
First quality no Augers....$5.50 $6.75 ...dis 40 %
Phillips' with Augers ..... 6.50 7.00 net

Braces.
C. S. Backus..... dis 60 %
Wilson Mfg. Co..... dis 10 %
Barber's ..... dis 40&5 %
Spofford's Patent..... dis 50&10 %
Noble's Patent..... dis 40&5 %
Ives' Patent Braces..... dis 10&10 %
Common Ball Bearing..... dis 10&10 %
Amidon's..... dis 50 %
Barker's Impd..... dis 40 %
Empire..... dis 30 %
Buffalo Ball..... dis 40 %

Brackets.—Shelf (Sargent's)..... dis 60&10 %

Bright Wire Goods list of Dec. 15, 1879.dis 60&10 %

Bull Rings.—Union Nut Co..... dis 60&20 %
Sargent's ..... dis 60&10 %
Hotchkiss' ..... new list dis 35%
Humason Beckley & Co.'s..... dis 60&10 %

Butts.
Wrought Brass ..... dis 45 %
Cast Brass, Tiebout's..... dis 30 %
" Corbin's..... dis 40&10 %
Fast Joint, Narrow..... dis 40&10 %
" " Broad..... dis 40&10 %
Loose Joint ..... dis 40&10 %
" Japanned ..... dis 50&10 %
" with Acorns ..... dis 55&10 %
Parliament Butts..... dis 45&10 %
Mayer & Hinges..... dis 45&10 %
Loose Pin no Acorn..... dis 50&10 %
" Acorns..... dis 50&10 %
" Japanned..... dis 50&10 %
" Plated Tips..... dis 50&10 %

WROUGHT IRON.

Fast Joint Narrow..... dis 40&10 %
" Lt. Narrow..... dis 40&10 %
" Broad..... dis 40&10 %
Loose Joint. Broad..... dis 50&10 %
Table Butts, Back Flaps, &c..... dis 40&10 %
Inside Blind, Regular..... dis 25&10 %
" Light..... dis 40&10 %
Loose Pin, Wrt..... dis 50&10 %

Spring Hinges·
American Spiral Spring Butt Co., Jap'd..... dis 25 %
" " " " Fancy..... dis 20 %
Gem Spiral Spring Butts, Japanned..... dis 25 %
" " " Ornamental..... dis 20 %
Geer's Spring and Blank Butts..... dis 25 %
Sabin Mfg. Co.'s Double Acting..... dis 35 %
Union Spiral Spring, Japanned..... dis 25 %
" Ornamental..... dis 20 %
Union Spring Hinge Co.'s..... dis 25 %
American Spring Hinge Co.'s..... dis 25 %
Union Mfg. Co..... dis 25 %
Bommer's..... dis 25 %
Hing Butts, Parker..... dis60&10&10 %
" Palmer..... dis 35&10 %
" Seymour..... dis 60&10 %
" Shepard's "Double Locking" Nos. 1 & 2..... dis 60&10&10 %
" Shepard's "Noiseless," Nos. 00 & 0..... dis 60&10&10 %
" Lull & Porter..... dis 60&10 %
" Nicholson..... dis 40&10 %
" Huffer..... dis 45 %
" Clark's, Nos. 1, 3, 5..... dis 60&10&10 %
" Sargent's No. 12,..... dis 70&10 %

Bow Pins.
Rotchkiss'..... low list net
Humason, Beckley & Co.'s..... dis 60 %
Sargent & Co 's..... $19.70 and $21.40. dis 60&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co..... dis 20 %
Bradley's..... dis 25 %
Beatty's..... dis 25&5 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Can Openers.
Messenger's Comet..... ₱ doz $3.00. dis 25 %
American..... ₱ doz $2.00. dis
Duplex..... ₱ doz 240. dis 15&20 %
Lyman's..... ₱ doz $3.75. dis 20 %
No 4. French..... ₱ doz $2.25, dis 40 %
No. 5, Iron Handle..... ₱ gross $7.50 dis 10 %
Eureka..... ₱ doz $2.50, dis 10 %
Sardine Scissors..... ₱ doz $7.00, dis 55 %
Star..... ₱ doz $5.00, dis 10 %
Sprague..... dis 40 %

Caps.—Percussion, ₱ 1000.
U. M. C., F. C. trimmed..... 50c } dis
" " F. L. ground..... 70c } 10&5 %
U. M. C. Cen. fire ground..... 70c } dis
" " Double W. proof..... 1.40 } 10&5 %
G. D. & S. B..... 50c, dis 7½ %
Double Waterproof, in 1-10's..... $1.40 } dis
Colt's Pistol, " ..... 70c } 10&5 %
F. L. " ..... 50c } dis 10&
E. B. 1-10, Trimmed..... 60c } 5 %
E. B. 1-10 Ground Edge..... 70c }
Musket, in 1-10's ..... 75c net

Cartridges.—Rim..... dis 60&10 %
Central Fire..... dis 20 %

Cards.—Horse and Curry..... dis 10 %
Cotton..... dis 10 %
Wool..... dis 25 %

Carpet Stretchers.
Cast Steel, Polished..... ₱ doz $5.00, dis 30 %
" Iron Steel Points..... ₱ doz $2.00, dis 35 %
Bullard's..... dis 25 %

Casters.
Bed..... new list July, '80, dis 25&10 %
Plate and Shallow Socket " " dis 25&10 %
Deep Socket " " dis 25&10 %

Cattle Leaders.
Humason, Beckley & Co.'s..... dis 60&10 %
Sargent's..... dis 65&10 %

Chain.
Trace, 6½-1-2..... ₱ pair 79c }
" 6½-10-3..... ₱ pair 70c } dis
" 7-10-2..... ₱ pair 86c }
German Halter Chain, New list Oct. 22, '79..... dis40 %
" Coil, New list Oct. 22, '79 ..... dis 40 %
Covert Halter, Hitching and Breast..... dis 40 %
Oneida Halter Chain..... dis 40 %
Galvanized Pump Chain..... ₱ lb 10c net
Jack Chain, Iron..... dis 50 %
" Brass..... dis 40 %

Chalk.
White..... ₱ gross 60c net
Red..... ₱ gross 80c net
Blue ..... ₱ gross 100c net
White Crayons..... ₱ gross 10c net

Chisels.
Socket Framing, Crossman..... dis 60&5 %
" " Buck Bros..... new list. dis 22½ %
" " Merrill..... dis 60&10 %
" " Witherby Tool Co..... dis 60&10 %
" " Douglass'..... dis 60&10 %
" Firmers, Crossman..... dis 60&5 %
" " Buck Bros..... new list. dis 22½%
" " Merrill..... dis 60&10 %
" " Witherby Tool Co... ..... dis 60&10 %
" " Douglass'..... dis 60&10 %
" Corner..... dis 60&10 %
Tanged Firmers Extra..... dis 33⅓&40 %
" " Butcher's..... $5.00 @ $6.25 to
" " Spear & Jackson's..... 5.00 to
" " Buck Bros (Shank)..... 5.25

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron..... dis 25 %
" Adjustable, Gray's..... dis 20 %
" " Lambert's..... dis 20 %
" " Snow's..... dis 40&5 %
" " Hammer's..... dis 15 %
" " Stearns'..... dis 15&10 %
" Cabinet, Sargent's..... dis 60&10 %
" Carriage Makers', Sargent's..... dis 60&10 %
" Cord and Tape (T. & S. Mfg. Co.)..... dis 30 %

Clips, Axle.
Norway or Best..... dis 40&10%
Superior..... dis 45&10 %

Coal Hods.
Griffiths..... dis 33⅓ %

Cockeyes...... dis 25 %

Cocks, Brass.
Hacking ..... new list, July 10, '80 }
Gloves..... " " } ....dis 40 %
Plain Bibbs..... " " }
Ale and Beer..... " "

Coffee Mills.
Board and Box..... new list, Jan., 1880, dis 35 %
Increase Wilson's..... net
Selsor's Pat..... $9.50, $10.50, dis 25%
American (Enterprise Mfg. Co.)..... dis 20%
French Steel..... dis 20
The Swift (Lane Bros.)..... dis 0

Combined Dinner Pail and Lantern.
Per doz $14.00..... dis 30 %

Compasses, Dividers, &c.
Compasses..... dis 45&10 %
Calipers..... dis 45&10 %
Dividers..... dis 45&10 %
Bemis & Call Co.'s Dividers..... dis 60&5 %
" " Compasses & Callipers....dis 50&5 %
" " Wing & Inside or Outside.dis 60&5 %
" " Double..... dis 60 %
" " Call's Pat. Inside ..... dis 30 %
Cook's..... dis 25 %
Excelsior..... dis 50 %
Miller's Patent..... dis 25 %

Coopers' Tools.
Bradley's..... dis 15 @ 20 %

Corkscrews.—Humason & B.. ..... dis 33⅓ %
Clough's Wire..... dis 25 %

Corn Knives and Cutters.—Bradley's..dis 10 %
Wadsworth's... ..... dis 33⅓ %

Crow Bars.
Cast Steel..... ₱ lb 8½c
Iron, Steel Points..... ₱ lb 6½c

Curling Irons, &c.
⅛, ⅝, ¾ in., $1.80 2.00, 2.40..... dis 10 %
Curling Tongs..... ₱ doz $3.60, dis 10 %
Pinching Irons..... ₱ doz 7.50, dis 20 %

Curry Combs.
Fitch's (List of No. 240, $1)..... dis 40 %
Hotchkiss' Novelty..... new list, July, 1880, dis 25 %
" Excir. Supr. Champion..... dis 25 %
Lawrence..... new list, July 1880 dis 25 %
Lawrence, with detachable Mane Comb new list July 1880, dis 25 %
Rubber..... ₱ doz $10.00, dis 15 %

Curtain Pins.—Silvered Glass ..... net
White Enamel..... 8c

Cutlery.
Meriden Cutlery Co. (Table)..... net
Am. Miller Bro.'s Cutlery Co..... dis 25 %
Humason & Beckley, Pocket..... dis 33⅓ %
The wm. Rogers Mfg. Co..... net
Naugatuck Cutlery Co..... list net
Aaron Burkinshaw's Pocket..... dis 25 %

Dog Collars.
Embossed Gilt..... dis 20 %
Leather..... dis 30 %
Brass..... dis 25 %

Door Springs.
Torrey's Rod..... ₱ doz $2.10, dis 10 %
Gray's " ..... ₱ doz $1.70. net
Bee Rod..... ₱ doz $1.70, net
Gem (Coil)—
No. 1, Large, Japanned..... ₱ doz $3.50 }
No. 2, Medium, ... ₱ doz 2.50 } list net
No. 3, Small. ..... ₱ doz 2.00 }
Challenge (Coil)—
Nos. 9 7 6
Japanned..... ₱ doz $2.00 2.50 3.50 }
Coppered..... ₱ doz 4.00 4.50 5.00 } is 10 %
Galvanized..... ₱ doz 3.50 4.00 4.50 }
Nickeled..... ₱ doz 5.50 6.00 7.00
Star (Coil)—For Cop'd. Nickel-Plated, &c. see list.
No. 4, ("Snoo Fly") Screen door size ₱ doz $1.80 }
No. 5, Screen Door Size..... ₱ doz $2.00 } dis 20 %
No. 6, Medium..... ₱ doz 2.50 }
No. 7, Large. ..... ₱ doz 3.50 }
Sabin's Lever..No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss ....No. 1, $5.40; 2, $4.20; 3, $3.00. dis 40 %
Sabin's Crown..... ₱ doz $2.75, dis 40 %
Philadelphia..... 5 in., $5.00; 6 in., $7.00, dis 35 %
Barker's Concealed..... dis 20 %
Cowell's..... ...No. 1, $18.00; No. 2, $15.00 ₱ doz. dis 50 %
Rubber, complete..... ₱ doz $1.80, net
Hercules..... dis 40 %

Drawing Knives.
Crossman's No. 1..... dis 60&5 %
Merrill..... dis 60&10 %
Nobles Mfg. Co ..... dis 15 %
Bradley's..... dis 35 %
Adjustable Handle..... dis 20 %
Witherby Tool Co..... dis 60&10 %
Douglass ..... dis 60&10 %

Drills and Drill Stocks.
Blacksmiths'..... each $2.70 net
Blacksmiths Self Feeding..... each $7.50. dis 20 %
Breast P. S & W..... dis 20 %
" Hotchkiss..... dis 2c %
Breast, Wilson's ..... dis 20 %
" Miller's Falls..... each $3.00. dis 25 %
" Bartholomew's... ..... each, $2.50 dis 25&10 %
Ratchet, Merrill's ..... dis 10 %
" Ingersoll's..... dis 25 %
" Whitney's..... dis 20 %
" Weston's..... dis 20 %
" Moore's Triple Action..... dis 30 @ 25 %
Whitney's Hand Drill..... dis 50 %
Wilson's Drill Stocks..... dis 10 %
Automatic Boring Tools..... each $2.25, dis 20 %

Drill Chucks.—Morse's Beach Patent..... dis 30 %
" Adjust..each $10.00, dis30 %
Danbury..... $8.00, dis 30 %

Egg Beaters.
Dover..... ₱ doz. $2.50 net
National..... ₱ doz $4.50, dis 33⅓ %
Family..... per gross $33; per doz., $3.00 net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved) ₱ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ₱ doz $4.60 @ $10.20 net
Storehouse. (Duc's Patent) 12 to 17, $12.00 @ $20.00.... net

Emery and Emery Paper.
Genuine Chester—Regular Nos..... ₱ lb
" " Flour and FF..... ₱ lb
" " in 10-lb. cans. ..... 2c extra
Washington Mills—Regular Nos..... ₱ lb 8c
" Flour..... ₱ lb 6c
Wellington Mills, Grain..... ₱ lb 10c net
" Flour..... ₱ lb 8c net
Hampden Emery Grain..... 5c net
" Flour..... 3c net
B. & A. Emery Paper..... dis 20@25 %

Enameled and Tinned Ware.
Kettles..... 45 %
Sauce Pans..... dis 30 %
Tinned Sauce Pans..... dis 30 %

Escutcheon Pins.
Iron..... dis 20 %
Brass..... dis 45 %

Escutcheons.
Door Lock..... Same discounts as Door Locks
Brass Thread..... dis 55 %
Wood ..... dis 25 %

Faucets.
Fenn's ..... dis 40 %
Fenn's Cork Stops..... dis 33⅓ %
Star..... dis 55&10 %
Frary's Patent Petroleum..... dis 20&10 %
Wood and Metallic..... dis 40 %
West's Patent Key..... dis 45 %
Metallic Key, Leather Lined..... dis 50 %
Cork Lined..... dis 70 %
Enterprise (Self Measuring)..... ₱ doz, $36.00, dis 20 %

Felloe Plates..... ₱ lb 10c, dis 10 %

Files.
Auburn..... $4.00 to £. dis 35 %
Arcade..... $5.00 to £. dis 20 %
Black Diamond, new list..... dis 30 %
E. M. Boynton's..... new list, dis 25 %
Nicholson ..... (Nicholson List) dis 30 %
Madden & Cockayne File Co..... dis 20 %
Heller & Bros new list)..... dis 15 %
Hiscox File Mfg. Co., new list..... dis 20 %
J. & Riley Carr..... 4.50 to £
Johnson & Bro..... dis 20 %
Butcher's..... 4.50 to £
Walter Spencer & Co.'s "Diamond"..... 4.50 to £
Fisher's..... 4.75 to £
Moss & Gamble..... 4.50 to £
H. Disston & Sons (new list)..... dis 30 %
Western (new list)..... dis 20%
Limet & Co. (French)..... $4.25 to £
Union File Works (new list)..... dis 30 %

Fluting Machines.
Knox, 4-inch Rolls..... $3.25 each }
" 6 " " ..... 4.00 " } dis 10 %
" 8 " " ..... 6.50 " }
Peerless, 4-inch Rolls..... 4.00 each net
" 5 " " ..... 4.75 each net
Eagle, 3½-inch Roll..... $2.15, dis 10 %
" 5½ " " ..... $2.85, dis 10 %
Eureka, No. 1, 7-inch Roll..... 6.00 each, dis 10 %
" No. 2 4-inch Roll..... 4.00 each, dis 10 %
Crown, 4½-in. $3.50; 5-in., $4.00; 6-in., $6.50 each dis 10 %
Star, " 4½ in., $4.00; 5 in., $5.00 each dis 10
Crown Jewel ..... 6 in., $3.40 each dis 10 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 10 %
Domestic Fluter..... 1.50 each net
Geneva Hand Fluter, No. 1..... ₱ doz $15, dis 20 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00 ₱ doz..... dis 10 %
Shepard Hand Fluter..... No. 75 ₱ doz $15, dis 10 %
" " " No. 90, $9.00; No. 110, $7.25;
" " " No. 100, $8.00 ₱ doz..... net
Clark's Hand Fluter..... ₱ doz $15.00, dis 20 %
Combined Fluter and Seal Iron..... ₱ doz 15.00, dis 30 %
Buffalo..... ₱ doz 10.00, dis 10 %

Fluting Scissors..... dis 45 %

Forks.
Hay, Manure and Spading ..... dis 40&5 %
Plated "A 1, Rogers & Bro..... dis 33⅓&5 %
" Reed & Barton..... dis 33⅓&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co..... dis 20 %
American..... dis 20 %

Fry Pans.
Burnished, list as follows..... dis 55 %

No.....	0	1	2	3	4	5	6	7	8
₱ doz....	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

"Acme"..... dis 45 %

Gauges.
Marking, Stanley's..... dis 45&10 %
" Chapin's..... dis 50&10 %
Wire..... dis 10 %
" Smith's Patent..... ₱ doz $18.00, dis 40 %

Gimlets.
Nail and Spike..... dis 45 %
"Bee" Gimlets..... ₱ gross $12.00 dis 60&10 %
"Eureka Gimlets..... dis 60 %
"Diamond Gimlets..... dis 40 %
Double Cut Shepardson's..... dis 40 %
" " Hartwell's..... dis 60 %
" " Ives'..... dis 60 %
" " Douglass'..... dis 40%

Glue Pots.
Tinned and Enameled..... dis 30 @ 35 %
Family, Howe's "Eureka"..... dis 40 %
" L. F. & C.'s "Handy ..... dis 25 %

Grindstone Fixtures.
Sargent's Patent..... dis 60&10 %
Reading Hardware Co., new list..... dis 25&10 %
" " " Keystone"..... dis 25&10 %

Gun Wads.
U. M. C. B. E. 11 up..... $2.00 }
" " 9 & 10..... 2.30 }
" " 7 & 8..... 2.60 } dis 5&5 %
" P. E. 11 up..... 3.10 }
" " 9 & 11..... 4.00 }
" " 7 & ..... 4.90 }

Halters.
Covert's Pat. Rope..... dis 50 %
Horse and Cattle Ties, Covert's ..... dis 50 %

Hammers.
Maydole's..... dis 15 %
Cheney's ..... dis 25 %
R. Hammonds (new list July 20, '80)..... dis 20 %
Humason & Beckley..... dis 50 %
Verree..... dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75.dis 20&10 %
Warner & Noble's..... dis 10 %
Kip's (old list)..... dis 20 %
Yerkes & Plumb..... dis 15 %

Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ₱ doz } dis 10 %
" " Leg Irons, $25 ₱ doz .... }
Tower's..... dis 25 %

Handles.—Door or Thumb Latches—

Nos.	0	1	2	3	4	
Per doz....	$0.80	1.00	1.18	1 35	1.40....	dis 55@60 %

Roggin's Latches..... per doz 40c@45c net
Bronzed Iron Drop Latches ..... ₱ doz $0.90 @ 1.15 net
Jap'd Store Door Handles—Nuts. $2.00: Plate $1.35 no Plate, $1.08..... net
Barn Door..... per doz $1.88, dis 10 %
Wrought Chest..... dis 55&10 %
Surface Chest. Sargent's list..... dis 62½&10 %
Flush Chest..... dis 45&10 %
Lifting..... dis 50&10 %
Saw and Plane..... dis 40&10 %
Boynton's Pat. Loop Saw Handles..... dis 25 %
" " Centennial Saw Handles..... dis 25 %
Hammer and Hatchet..... dis 20 %
Brad Awl..... ₱ gross $2.00, dis 20&10 %
Hickory Firmer Chisel, assorted, ₱ gross $4.50
" " " large, " 5.00
Apple " " assorted, " 5.00
" " " large, " 6.00
Socket " " assorted, " 3.00 } dis
" Framing " assorted, " 5.00 } 20&10 %
File, assorted, ₱ gross..... 2.75 }
Auger, assorted, ₱ gross..... 6.00 }
" large, " ..... 7.00 }
Patent Auger, Ives'..... dis 25
" Douglass'..... ₱ set $1.25, net
" Swan's ..... ₱ set $1, net

Hangers.
Barn Door..... dis 55&10 %
Noveity..... dis 40 %
Challenge..... dis 50 %
Climax (Anti-Friction)..... dis 40 %
Sterling Improved (Anti-Friction)..... dis 60&10 %
Cheritree..... dis 60 %
Kidder's..... dis 40 %

Harness Snaps.
Henshaw's...List of 1½ changed to 14 00, dis 50&10 %
Judd's..... " " " 14.00. dis 60&10 %
Fitch's (Bristol) " " 14.00, dis 50&10 %
Rotchkiss'..... dis 10 %
Andrews'..... dis 50 %
Sargent's..... dis 60&10 %
"German ..... dis 60&5 %
Covert..... dis 40 %

Hatchets.
Isaiah Blood..... dis 15 %
Shingling, Nos. 1 2 3..... ₱ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3..... ₱ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3..... ₱ doz 7.50 8.00 8.50
Hunt's..... dis 12&5 %
Shingling, Nos. 1 2 3..... ₱ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3..... ₱ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3..... ₱ doz 7.50 8.25 9.00
Hurd's..... dis 33⅓
Shingling, Nos. 1 2 3..... ₱ doz $8.00 $8 50 $9.00
Claw, Nos. 1 2 3..... ₱ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3..... ₱ doz 8.00 8.50 9.00
Yerkes & Plumb..... dis 15 %
Shingling, Nos. 1 2 3..... ₱ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3..... ₱ doz 8.25 8.75 9.25
Lathing Nos. ₱ doz 7.50 8.00 8.50
Simmon's..... dis 2c
Shingling, Nos. 0 1 2 3.... ₱ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3..... ₱ doz 8.00 8.50 9.00
Lathing, Nos. 1 2 3..... ₱ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4..... ₱ doz 9.00 10.00 12.00 14.00
" Nos. 5 6 7 8..... ₱ doz 16.00 18.00 20.00 22.00
Collins ..... dis 10 %
Shingling, Nos. 1 2 3..... ₱ doz $9.00 $6.50 $7.00
Claw Nos. 1 2 3..... ₱ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3..... ₱ doz 6.00 6.50 7.00

Hay Knives.
"Lightning"..... ₱ doz $20.00 net
Wadsworth's..... dis 33⅓

Hinges.
Gate, Western..... ₱ doz $10.00, dis 60 %
" N. E..... ₱ doz $10.13, dis 62 %
" N. E. Reversible..... ₱ doz $6.50. dis 60
Gate, Clark's No. 1..... ₱ doz $8.00. dis 50 %
" N. Y. State..... ₱ doz $0.10, dis 50&10 %
" Automatic..... ₱ doz $12.50 dis 40 %
" Common Sense..... dis 10 %
" Seymour's..... dis 40&10 %
" Shepard's..... Nos. 10, 20 & 25, dis 45 %
Rolled Blind Hinges..... dis 6&10 %
Rolled Plate..... dis 6&10 %
Rolled Raised..... dis 6 &10 %
Wrought Strap and T, list Dec. 20, '77 ..... dis 45&10 %
Plate Hinges { 8, 10 & 12 in. $6.50 ₱ 100 lb } dis 10 %
"Providence" { over 12 in. $5.20 ₱ 100 lb } dis 10 %
Screw Hook and { 8, 10, 12 in., $6.75 ₱ 100 lb } dis 10 %
Strap..... { 14 to 36 in., $5.50 ₱ 100 lb } dis 10 %
Heavy Welded Hook { 8 to 12 in., $6.75 ₱ 100 lb } dis 10 %
{ 14 in. & up, 5.50 ₱ 100 lb }
Screw Hook and Eye..... { ⅜ & 1 in., 90 } dis
{ ½ in. 90 } 20 %
{ ⅝ in. 100 }
{ ¾ in. 120 }

Hoes.—Riveted Shank..... per doz, $4.00; dis 35 %
Socket..... ₱ doz $5.25, dis 35 %

Hooks.
Grub..... dis 15 %
Planters'..... dis 35 %
Scovill Pattern..... dis 33⅓ %
Scovill Pattern, Handled..... dis 25 %
Hick's Pat. Solid C. S. Planters'..... dis 20&10 @ 30 %
" " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters..... dis 25 %
" " Scovill Pattern..... dis 20@25 %

Hooks.
Bird Cage, Sargent's list..... dis 60&10 %
Cotton..... dis 40 %
Cotton, Patented (N. Y. Mallet & Handle Wks), dis 30
Cotton (Humason & Beckley Mfg. Co.)..... dis 40 %
Belt, (new list Dec. 24, 1879,)..... dis 60&10%
Bench—Hotchkiss' $5.00 ₱ doz..... net
" Weston's, No. 1, $10.00; No. 2, $9.00 ₱ doz dis 25 %
" McGill's, $3.00 ₱ doz..... dis 50 %
" Skinner's, $6.25 per doz..... dis 20 %
Clothes Line Sargent's list..... dis 60&10 %
" " Reading list..... dis 33⅓&10 %
Ceiling.. } Sargent's list..... dis 62&10 %
Harness. } Reading list..... dis 20&10 %
Coat and Hat, Sargent's list..... dis 60&10 %
" " Reading..... dis 33⅓&10 %
" " T. & S. Mfg. Co's list..... dis 25 %
Picture Hooks, Brown's Pat. Solid Brass, $4 per gross..... dis 25 %
Tassel (T. & S. Mfg. Co.)..... dis 40 %
Wrought Staples and Hooks and Staples..... dis 60&10 %
" Staples, Stanley's list..... dis 60&10 %
Wire Screw Hooks and Eyes, new list..... dis 60&10 %
Grass and Bush..... dis 40@45 %
Whiffletree—Patent..... dis 40 %
Hooks and Eyes—Malleable Iron..... dis 60&10 %
" Brass..... dis 60&10 %

Horse Nails.

Nos.	5	6	7	8	9	10	
Ausable..... ₱ lb	30c	27c	25c	24c	23c	22c	} dis
" Finished,							} 20 %
" Polished							}
or Blued... "	31c	28c	26c	25c	24c	23c	}

| Nos..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | } 15 % |
|---|---|---|---|---|---|---|---|---

Rail.
Sliding Door Wrought Brass.....₩ lb 42c dis 20 %
" " Iron, Painted . ₩ foot 10c. dis 60&10 %

Barn Door....Inch.....	⅛	⅝	⅞
Per 100 feet.	$2.60	3.40	5.40—dis 10 %

" for N. E. Hangers—

	Small.	Med.	Large.
Per 100	$2.10	2.70	3.30—net

Razor Straps.
Genuine Emerson.....dis 40@50 %
Badger's Emerson.....dis 40
Badger's (not Emerson).....dis 25 %
Evans'.....dis 40 %
Imitation Emerson.....₩ doz $2.75, dis 40&10 %
Hunt's.....dis 40&5 %
Chapman.....dis 15 @ 20 %
Saundr's.....dis 10 %
Torrey's.....dis 20 %

Rivets.
Iron and Tinned.....dis 30 %
In bulk, list of May 21.....dis 20 %
Copper Rivets and Burs.....dis 45 %

Nos..	7	8	9	10	11	12	13	14	15
₩ lb...	49c	50c	52c	54c	56c	58c	60c	62c	70c

Tinned Iron Belt Rivets and Burs.....dis 20 %

Rivet Sets.....dis 20&10 %

Rods.
Stair.....New , March 1 '79, 10¢
" American Patent.....dis 20 %

Rollers.
Barn Door, Sargent's list.....dis 55&10 %
Novelty.....dis 10 %
Acme (Anti-Friction).....dis 45 %

Rope. Manufacturers' Net List. Aug. 4, 1880
Manila.....½ inch and larger ₩ lb 12½c
" .....¾ inch ₩ lb 13c
" .....¼ and 5-16 inch ₩ lb 13½c
" Tar'd Rope.....₩ lb 12 c
Lath Yarn.....₩ lb 12 c
" Hay Rope.....₩ lb 12½c
Sisal.....½ inch and larger ₩ lb 10 c
" .....⅜ inch ₩ lb 10½c
" .....¼ and 5-16 inch ₩ lb 11 c
" Hay Rope.....₩ lb 10 c

Rules.

	Boxwood.	Ivory
Chapin's.. Standard.... Stanley Stephens.	dis 5:&10 %	dis 50&10 %

Sad Irons.
Solid. From 4 to 10 lbs.....₩ lb 37½c net
Self Heating.....₩ doz $20.00 net
" Tailors'.....₩ doz $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Enterprise Patent Cold Handle.....dis 30 %
Mrs. Pott's Pat. Cold Handle, "Crown".....dis 30 %
Combined Fluter and Sad Iron..per doz $14.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.75 ₩ ream
" " " 2, 2½ & 3. 5.25 ₩ ream
" " " Assorted 4.75 ₩ ream
" " Star.....3.75 ₩ ream
" " Emery..₩ ream $6.50 @ 11.50
New England, same list as B. & A. Flint.....dis 20@25 %
Gage's.....dis 20&5 %

Sash Cord.
Common.....₩ lb 14 @ 20c net
Patent.....₩ lb 19c net
Silver Lake Russia Flax.....₩ lb 60c. dis 10 %
" White Cotton.....₩ lb 60c. dis 10 %
" Drab Cotton.....₩ lb 65c. dis 10 %
Raw Hide.....dis 25 %
Steel Ribbon.....dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross.....dis 33⅓%
Ferguson's.....dis 33⅓ %
Walker's.....net
Hammond's Window Springs.....dis 25 %
Northup Window Springs.....$9.00 per gross, dis 10 %
The Perfect, Clark & Smith, Plain Jap'd ₩ gro $10.00 net
" " " Pol. Knob Jap'd. ₩ gro 14.00 net
" " " Nickel-Plated.. ₩ gro 27.00 ne

Sash Weights.—Solid Eyes, in 500 ℔ lots and over.....₩ lb 13½c net

Sausage Stuffers or Fillers.
Miles.....₩ doz $20, dis 30 %
Perry.....₩ doz, No. 1, $15; No. 0, $21, dis 30 %
Draw Cut No. 4.....each $30.00, dis 20 %
Enterprise Mfg. Co.....dis 20 %
Silver's.....dis 25 %

Saws.
Disston's Circular.....dis 35 %
" Mill.....dis 35 %
" Cross Cut.....dis 25 %
" Hand, Panel, Rip, &c.....dis 20 %
Boynton's Lightning, Cross Cuts, new list.....dis 20 %
" One-Man, all lengths, " .....dis 20 %
" Billet Webs, 30 in. " .....dis 25 %
" Lightning Buck Saws X Far.....dis 25 %
" Lightning Hand, Panel and Rip.....dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand.....dis 20 %
W. M. & C. Mfg. Co. Cross-Cuts, except Monarch, dis 20 %
Livingston's Butcher and Kitchen.....dis 20 %
" Framed Wood—

Nos....	101	102	103	104	105
Per doz..	$10.00	8.50	10.00	7.50	6.25 net

Saw Frames.
White, Vermont.....₩ doz $1.35, dis 25 %
Red, Polished and Varnished.....₩ doz $2.00, dis 25 %
Saw Rods.....$10 list dis. 10&10 %

Saw Sets.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz., $10.00.....dis 20 %
Stillman's Genuine.....₩ doz $4.00@$5.40 dis 1- %
" Imitation.....₩ doz $2.25, dis 20&10 %
Common Lever.....per doz $2.00, dis 20&10 %
Leach's.....No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's.....No. 1, $8.50; No. 2, $5.50, dis 20&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
" Bemis & Call Co.'s New Pat.....dis 40&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 30&5 %
" " Plate.....dis 10 %
" " Cross Cut.....dis 12½ %
Aiken's Genuine.....$15.00, dis 50&10 %
" Imitation.....$7.00, dis 50 %
Hart's Patent Lever.....dis 20 %
Disston's.....dis 20 %

Scales.
Hatch, Counter, No. 171.....₩ doz $36, dis 35&10 %
" Tea, No. 161.....₩ doz $15.00 dis 40&10 %
Union Platform.....$8.00, dis 45 %
Fairbanks'.....dis 20 %
Buffalo Scale Co.....dis 40 %
Howe's.....dis 20&5 %
Chatillon's Grocers'.....dis 45 %
" Eureka.....dis 25 %
Family Universal.....dis 50 %
" Favorite.....dis 30 %
" Turnbull's.....dis 30 %
Scale Beams, Chatillon's list.....dis 10 %
" " Sargent's list.....dis 40&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.50, dis 20&10 %
Box, 1 Handle.....₩ doz $5.00, dis 10 %
" 2 " .....₩ doz 6.00 dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 70&10 %
Ship (common).....per doz $3.00 net
" (Providence Tool Co.....dis 10 %

Screw Drivers.
Douglass Mfg. Co.....dis 20&10&10 %
Disston's.....dis 50 %
Disston's Patent Excelsior.....dis 50 %
Buck Bros.....dis 25 %
Stanley Rule & Level Co., Varnished Hdls...dis 50&10 %
" " " Black Handles...dis 40&10 %
Sargent & Co.'s.....dis 50&10 %
Gay's Double Action Ratchet per doz., 4 in., $9.00; 5 in., $10.20; 6 in., $12.00 dis 20 %
Cowles Hdw. Co., No. 1 Extra.....dis 40&10 %
" " No. 1.....dis 50&10 %
" " Nos. 4 and 00.....dis 30 %

Screws.
Flat H'd Iron.....dis 45 %
Round Head Iron.....dis 35 %
Flat Head Brass.....dis 35 %
Round Head Brass.....dis 25 %
Brass and Silver Capped.....dis 40 %
Japanned, list of Plain Screws.....dis 30&10 %
Coach Patent Gimlet Point, List per 100....dis 50@55 %
Bed.....dis 65@10 %
Machine, Flat Head, Iron, Am. Screw Co.....dis 60 %
" Round Head, Iron, " .....dis 55 %
Bench, Iron.....dis 55 %
" Wood, Beech.....₩ doz $3.00, dis 15 %
" Hickory.....dis 20&10 %
Hand.....dis 25&10 %
Hand Rail, Sargent's.....dis 20&10 %
" " Humason, Beckley & Co's.....dis 10 %
" " Am. Screw Co.....dis 35 %
Jack (Wilson's).....dis 30 %
Hart's Patent Lever.....dis 30 %
Disston's.....dis 20 %

Scales.
Hatch, Counter, No. 171.....₩ doz $36, dis 35&10 %
" Tea, No. 161.....₩ doz $15.00 dis 40&10 %
Union Platform.....$8.00.

NEW YORK WHOLESALE PRICES, September 15, 1880.

METALS.

IRON.—DUTY: Bars, 1 to 1¼c. ₩ lb; Sheet, Band Hoop and Scroll, 1¼ to 1¾c. ₩ lb; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ lb; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 lbs. Boiler and Plate, 1¼c. ₩ lb.

Iron—AMERICAN		
Foundry No. 1	(Nominal.)	₩ ton $26.00 @ 27.00
" No. 2X	"	₩ ton 22.50 @ 23.50
Gray Forge	"	₩ ton 20.50 @ 21.50
SCOTCH.		
Eglinton	(Nominal)	₩ ton 21.50 @ 22.50
Coltness	"	₩ ton 24.00 @ 25.00
Glengarnock	"	₩ ton 23.50 @ 24.00
Gartsherrie	"	₩ ton 23.00 @ 24.00
Rails.		
Iron (nominal)		₩ ton $47.00 @ 50.00
Steel (nominal)		₩ ton 60.00 @ 65.00
Old Rails Ts (nominal)		₩ ton 27.00 @ 28.00
Scrap.		
Wrought Scrap ₩ ton		27.00 @ 28.00

Bar Iron, from Store.—Nominal Prices.

Common Iron:	
¾ to 2 in. round and square / 1 to 6 in. x ⅜ to 1 in.	₩ lb 2.40
Refined Iron	
¾ to 2 in. round and square / 1 to 6 in. x ⅜ to 1 in.	₩ lb 2.00
1 to 6 in. x ¼ and 5-16	₩ lb 2.80
Rods—¾ and 11-16 round and square	₩ lb 3.40
Bands—1 to 6 x 9-16 to No. 12	₩ lb 3.30
Norway Nail Rods	7. c

Sheet Iron.

	Common American	R. G. American.
Nos. 16 to 20	₩ lb 3¾ @	5
21 to 24	₩ lb 4 @ c	5¼
25 to 26	₩ lb 4¼c	5¾
27	₩ lb 4¾c	5¾
28	₩ lb 4¾c	5¾
	B.B.	3d qual.
Galvanized, 16 to 20	₩ lb 8c	7c
21 to 24	₩ lb 8c	8c
25 to 26	₩ lb 9¼c	8½c
" 27	₩ lb 10¼c	9c
" 28	₩ lb 11¼c	9½c
Patent Planished	₩ lb 12c;	B. 10½c
Russia		13@15 c
American Cold Rolled		₩ lb 5¾@7½c

COPPER.—DUTY: Pig, Bar and Ingot, 5c; Old Copper 4c lb; ₩ Manufactured (including all article of which Copper is a component of chief value), 45 % ad valorem.

American Ingot	₩ lb See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 16oz. per sq. ft., and over per lb	28c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₩ sq. ft.	₩ lb 30c
Braziers Copper 10 oz and 12 oz., ₩ sq. ft.	₩ lb 32c
Lighter than 10 oz. ₩ sq. ft.	₩ lb 34c
Circles less than 84 in. n diameter	₩ lb 31c
Circles 84 in. diameter and over	₩ lb 34c
Segment and Pattern Sheets	₩ lb 31c
Locomotive Fire Box Sheets	₩ lb 28c
Sheathing Copper, over 12 oz. ₩ sq. ft.	₩ lb 26c
Bolt Copper	₩ lb 28c
Copper Bottoms	₩ lb 31c

No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.

14x48	₩ sheet 60

All other size Sheets, 2½c. per square foot.
For tinning both sides, double the above amount
O'REILL'S PATENT PLANISHED COPPER.—Net.

14x48.	
14 and 16 oz. and heavier	₩ lb 36c
By the case	₩ lb 37c
12 oz. and lighter	₩ lb 39c
" "	₩ lb 38c

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60.

14 and 16 oz. and heavier	₩ lb 38c
By the case	₩ lb 37c

(And all sizes not over 20 in. wide.)
30x60.

14 and 16 oz. and heavier	₩ lb 40c
12 oz.	₩ lb 43c

Brass.

Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis 20%.
Jnne 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantity than 100 lbs. add 3c ₩ lb.

HIGH BRASS.

All Nos. not thinner than to No. 26, wider than 2 in., not wider than 14 in. 30c
All Nos. to No. 26, inclusive, and widths over 14 to 20 in., inclusive. 33c
All Nos. to No. 26, inclusive, and widths over 20 to 30 in., inclusive. 36c
¼c ₩ lb advance on each No. above Nos. 26 to 36, inclusive.
All Brass thinner than No. 36 is Platers' Brass, at 43c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 57c
Printers' Rules 45c
Sheets wider than 30 in. and under 40 in 47c
" 40 in. and over 60c

Circular Sheets, in diam. from 4 in. to 14, inclusive. 30c
" " over 14 " 20, " 45c
" " " 20 " 30, " 49c
" " " 30 " 40, " 55c
" " " 40 in 59c

LOW BRASS.

4c ₩ lb more than High Brass.
Gilding Metal, 8c ₩ lb more than High Brass.

Platers' or Gold Metal / In Bars	43c
Platers' or Gold Metal / Sawed	51c
Platers' or Gold Metal / Planed or Polished	54c

FOR SLITTING.

Metal in width 2 in. to ⅜ in. to No. 26, inclusive, 1c. ₩ lb advance.
Metal, in width 2 in to 1 in., thinner than No. 26, 2c. ₩ lb advance.
Metal, in width 1 in. to ⅜ hinner than No. 26, 3c ₩ lb advance
Metal, in width ⅜ in. to ¼, inclusive, not thinner than No 26, 2c. ₩ lb advance.
Metal, in width ¼ in. to ¼ thinner than No. 26, 5c. ₩ lb advance.
Metal, ¼ in. in width and less, 10c. ₩ lb advance.
Any of the above widths cut to particular lengths, add 7c. ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.52	$0.70
6 " " "	56	76
10 " " "	64	.88
15 " " "	.74	1.03
12 " " "	.80	1.12

German Silver Sheets over 12in. wide and weighing more than 10 lbs., $2.00 ₩ lb.
Advance 2c. for each additional inch in width above 12 in., and 2c. ₩ lb on each No. thinner than Nos. 26 to 36, inclusive
All German Silver thinner than No. 36 is Platers, at 50c ₩ lb additional.
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 6 to 20	$0.33	$0.37	$0.43
No. 21	.36	.40	.46
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.43	.47	.53
No. 26	.45	.49	.55
No. 27	.48	.52	.58
No. 28	.52	.56	.63
No. 29	.55	.59	.66
No. 30	.58	.63	.72
No. 31	.63	.68	.78
No. 32	.66	.70	.84
No. 33	.70	.74	.93
No 34	.74	.78	1.03

Spring Wire 2c ₩ lb advance.
Flat, Square and Half Round Wire 5c ₩ lb advance on Round Wire.
Fancy Wire not less than 10c ₩ lb advance of Round Wire.
Brass Rods, No. 8 and larger not less than 2 feet lengths, 38c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 43c.
Wire and Rods less than 2 feet lengths, special rates
Twelve cents per lb extra for spooling on 1 lb spools

MISCELLANEOUS.

Brass Pail Ears	$0.40
Brass Door Rail	.43

SCRAP.—dis. 20 %

High Brass Scrap	12c
Low "	14c
Gilding "	10c

Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 20 % ₩ lb

Plain No inclusive above ¼ in. to 3 in.	$0.13
" above 3 in	.53

Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cent advance on List for each Number.
Above No. 26, special rates.

Plain, ¼ inch	.70
" 3-16 "	1.10
" ⅛ "	1.50

Mandrel Drawn Tubes, 5 cents advance on List Prices.

Fancy Tubing to No 20	50c
English, Scotch and Extra Patterns Fancy Tubing to No. 20	.55

Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ¼ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ¾ in. 25 cents per pound advance.

MISC TUBING.—dis 20 %.

Plain	.27
Fancy	.33
Scotch and Extra Patterns	.40

GERMAN SILVER TUBING.—dis 10 %

4 Per cent	.80
6 "	.90
9 "	1.05
12 "	1.20
15 "	1.35
16 "	1.40
18 "	1.50
20 "	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils valued at 7 cents ₩ lb., or under, 2¼c cents; over, 7 cents, and not above 11, 3 cents ₩ lb; over 11, 3½ cents ₩ lb, and 10 % ad val. Railway Bars, 1¼ cents ₩ lb. Railway Bars, in part Steel, 1 cent ₩ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.—	
Best Cast	₩ lb 15½c
Extra Cast	₩ lb 16½c
Round Machinery, Cast	₩ lb 10c
Swaged, Cast	₩ lb 18c
Best Double Shear	₩ lb 15½c
Blister, 1st quality	₩ lb 15c
German Steel, Best	₩ lb 11c
" 2d quality	₩ lb 10c
" 3d quality	₩ lb 9c
Sheet Cast Steel, 1st quality	₩ lb 15½c
" 2d quality	₩ lb 14½c
" 3d quality	₩ lb 12½c

ANTIMONY	See Trade Report.

LEAD.—DUTY Pig $2 ₩ 100 lbs: old Lead, 1½c lb ₩ Pipe and Sheet, 2½c ₩ lb.

American	5¼ @ 5½c
Bar	6c net
Pipe	6½c dis 10 %
Tin Lined Pipe	10c. dis 10 %
Sheet	7c. dis 10 %
Shot	Drop 7½c. Buck. 8½c
Chilled Shot	8½c

RABBITT METAL.

N. P. U	₩ lb @ 80

A. 360; B, 200; C, 150.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.10 ₩ lb; Electro-galvanized Plates, 20 ₩ lb; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent

Banca	25 ₩ lb 26c
Straits	₩ lb 22c
English	₩ lb 22@20

TIN PLATES.

I C 10x14 / 14x20 Prime Charcoal	$6.50 @ 6.75
I C 12x12 "	6.75 @ 7.00
I X 10x14 / 14x20 Charcoal	8.50 @ 8.75
I X 12x12 " "	8.75 @ 9.00
D C 12½x17	6.00 @ 6.25
D X 12½x17	8.00 @ 8.25
For each additional X add	2.00

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14 / 14x20	$5.00	5.00 @ 5.75
I C 12x12	5.25	5.40 @ 5.75

TERNE PLATE

	Prime Char.	2d qual.	Coke.
I C 14x20	$6.00 @ 6.25	5.75	5.25 @ 5.50
I X 14x20	8.00	....	...
I C 20x28	12.50 @ 13.00	12.00	11.00 @ 11.75
I X 20x28	16.50	....	...
I C 20x30	22.00	" "	....
I C 14x20 M. F. Brand			8.25 @ 8.50

SOLDER	No. 1, 13c @ 13 c; No 2, 11c
SPELTER—DUTY: In Pigs, Bars and Plates, $1.50 ₩ 100 lbs.	
American, cash	5¾ c
Bergen Port from Lehigh Ore	10c
Lehigh, on spot	9c

ZINC.—DUTY: Pig or Block, 1.50 ₩ 100 lbs. Sheet 2½c ₩ lb.

Sheet, Cask	7¼
" Open	8 @ 8½

Paper Stock, &c.

(Dealer's Selling Price.)

Canvas lines	4 @
White cotton, new	4½ @
" " No. 2	3½@
White linen rags No. 1	5 @
" " No. 2	3½ @
Seconds	2¾ @
Soft woolens	.12 @ 1
Gunny bagging	3¾ @
Jute Butts	3 @ 3½
Kentucky bagging	4½@5
Waste paper and scraps	1 @ 1½
Rope cuttings	1½ @ 3
Kentucky bale rope	4 @ 4½
Grass rope	3¼ @ 3½
Tarred shaking	1¾ @
Hard White Shavings, No. 1	4½ @ 4¾
Soft " No. 1	4 @ 4½
White Shavings, No. 2	3¾ @
Mixed " part white	3¼ @
Imperfections, No. 2, best folded sheets	3¼ @ 3½
" No. 1, Heavy Stock	3¼ @
Book Stock	3¼ @
" " Heavy	3¼ @
" " Light	1½ @ 1¾
Newspapers	2½ @ 2½
Prints	1½ @
Pure Manilas	2¾ @ 3
Bogus Manilas and Hardwares	$1.25 @ 1.40
Commons	.90 @ 1.00
Binders' Board Cuttings	1.00 @ 1.25
Straw board Cuttings, clean	1.00
Woolen Tailor Clips	18 @ 19
Satinet	2½ @ 3½

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ lb 20c
" " Ordinary	5c
" Ivory Drop, fair	12 @ 15c
" " best	20c
Black Paint, in oil	kegs 8c asst'd cans, 11c
Blue Prussian, fair to best	40 @ 45c
" " " in oil	45 @ 55c
Blue Chinese dry	85c
" Ultramarine	18 @ 30c
Brown, Spanish	1½c
" Van Dyke	10@12c
Carmine, 40	combination price
Green, Chrome	15 @ 25c
" " in oil	14 @ 18 @ 25c
" Paris	good 25c; best, 30c
" " in oil	30c; 45c
Iron Paint, Bright Red	₩ lb 2½c
" Brown	₩ lb 1½c
" Purple	₩ lb 3c
" Ground in Oil, Bright Red	₩ lb 4½c
" " " Red	₩ lb 3c
" " " Brown	₩ lb 2½c
" " " Purple	₩ lb 6c
Mineral Paints	1¼ @ 4c
Orange Mineral	10c
Red Lead, American	7½c
" English	none in market
" Venetian (N. C.) dry	$1.65 @ $1.70
" in oil	asst'd cans, 11c; kegs, 8c
" Indian dry	9 @ 12c
Rose Pink	10 @ 13c
Sienna, American, raw	4c
" Burnt	4½c
" " in oil	10 @ 15 @ 20c
" Raw	11 @ 15 @ 20c
Umber, Burnt	4 @ 8c
" " in oil	9 @ 12 @ 16c
" Raw	3½ @ 7½c
" " in oil	10 @ 15 @ 18c
Vermillion, Chinese	90c
" English	55 @ 57½c
" Trieste	1.10c
" American, Common	14c
White Lead, American, pure dry	8c
" " in oil	8½ to 9c
White, Paris, English, prime	in bbls. 2 @ 2½c
Yellow Ochre, French	$1.75
" " " in oil	asst'd cans, 11c; kegs, 8c
" " Vermont	in casks, 1½c
Yellow Chrome	17 @ 27c
" " in oil	14 @ 18 @ 25c
Zinc White American No. 1, dry	5 @ 5½
" " No. 1, in oil	9c
" French (Paris)	8 @ 10c
" " in oil	@ 10c

Oils.

Linseed, Raw, in casks and bbls	gal. 58c
" Boiled, " "	61c
Bleached Whale	₩ gal. 61c
" Sperm	₩ gal. $1.15
" Elephant	64c
Signal	44c
Prime Lard	64c
No. 1	58c
West Virginia	15c @ 22c
Drilling	40c
Empire Cylinder	84c
Miners' Oil	40 to 42c
Fish Oil, pressed	40c
Neatsfoot	75c
Tallow	8c
Machinery	60c
Burning	35c

Sundries.

Asphaltum	9c
Benzine	₩ gal 16c
Chalk	3½c
" Block	3½c
Dryer, Patent, Am'n	ass't cans, 10½c; keg, 9c
Frostings	50c
Glue, White	33 @ 44c
" Sheet	30c
Glaziers' Points, Zinc	8c
Gum, Copal	36c
" Damar	24c
" Shellac, English	16c
" " dark	42c
Litharge, English	7½c
Mineral Wool	₩ lb 1¼ @ 1½c
Pumice Stone, selected Lumps	4 @ 6c
" powdered	2½c
Putty, in bladders	3 c
" in bulk	2½c
Spirits Turpentine	32c
Whiting Spanish	3½c

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

Single Thick.—Discount 50 & 15 %

SIZES.	1st.	2d.	3d.	4th
6 x 8 to 10 x 15	$ 8.00	$ 6.75	$ 6.25	$ 5.75
11 x 14 to 16 x 24	8.75	8.00	7.50	7.00
18 x 22 to 20 x 30	11.25	10.50	9.75	8.75
15 x 36 to 24 x 30	12.75	11.50	10.00	
26 x 28 to 24 x 36	13.50	12.25	11.25	
26 x 36 to 26 x 44	14.75	13.75	11.75	
26 x 46 to 30 x 50	16.25	15.00	13.00	
30 x 52 to 30 x 54	17.25	16.00	13.50	
30 x 56 to 34 x 52	18.75	16.75	14.00	
34 x 58 to 34 x 60	19.50	18.00	16 00	
36 x 60 to 40 x 60	21.00	19.50	18.00	

Double Thick.—Discount 70 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12.00	$11 00	$10.00	$ 9.25
11 x 14 to 16 x 24	14.75	13.75	12.75	11.75
18 x 22 to 20 x 30	19.00	17.75	16.00	
15 x 36 to 24 x 30	21.00	19.25	16.50	
26 x 28 to 24 x 36	23.00	20.75	18.25	
26 x 36 to 26 x 44	25.00	23.00	19.25	
26 x 46 to 30 x 50	27.00	25.00	21.25	
30 x 52 to 30 x 54	28.50	26.00	22.25	
30 x 56 to 34 x 52	30.00	27.75	24.75	
34 x 58 to 34 x 60	31.75	30.00	27.00	
36 x 60 to 40 x 60	35.40	32.50	30.25	

Sizes above 40 x 60—$10.00 per box extra for every five inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches will be charged in the 81 united inches bracket

MINERS' CANDLES.

Superior to any other Light for Mining Purposes. Manufactured by

JAMES BOYD'S SON,

Nos. 10 & 12 Franklin St., New York.

Gunpowder.

GUNPOWDER.

DUPONT'S

Rifle, Sporting and Blasting Powder

The most popular Powder in use.

Dupont's Gunpowder Mills, established in **1801** and **1802,** have maintained their great reputation for 78 years. Manufacture the following celebrated grands of Powder:

DUPONT'S DIAMOND GRAIN,

Nos. 1 (coarse) to 4 (fine), unequaled in strength, quickness and cleanliness; adapted for Glass Ball and Pigeon Shooting.

DUPONT'S EAGLE DUCKING,

Nos. 1 (coarse) to 3 (fine), burning slowly, strong and clean; great penetration; adapted for Glass Ball, Pigeon, Duck and other shooting.

DUPONT'S EAGLE RIFLE,

A quick, strong, clean Powder of very fine grain for Pistol and Rifle shooting.

DUPONT'S RIFLE, Fg, "Sea Shooting,"

FFg and **FFFg.**—The **Fg** for long range rifle shooting, the **FFg** and **FFFg** for general use, burning strong and moist.

Also all kinds of Sporting, Mining, Shipping and Blasting Powders of all sizes and descriptions. Special grades for **export.** Also, Musket, Cannon, Mortar and Mammoth Powder, U. S. Government standard. Powder manufactured to order of any required grain or proof. Agencies in all cities and principal towns throughout the U. S. Represented by

F. L. KNEELAND, 70 Wall St., N. Y.

N. B.—Use *none* but **Dupont's Fg** or **FFg** Powder for long-range Rifle shooting.

GUNS. Wholesale Special Terms, of nature of consignments of Colt and other guns, viz.: Parties who wish not to carry Guns beyond January 1, may return us the following brands of Breech-Loaders:

Nos. 8490, 8601, 392, 392, 393, 394, 395, 396, 375, 377, 378, 362 and Colt guns. And of Muzzle-Loaders, Nos. 500, 512, 520, 531, 218, 622 and 642.

PISTOLS.—Colt, Smith & Wesson, and cheap work in fancy style; Eclipse Vest Pistols, nickeled, 50c.

Tatham Soft and Chilled Shot.

Bogardus and Star Rocket Cartridges for evening use with Breech-Loading Guns.

Gunpowder. **Hazard, Dupont, Oriental, Dead Shot,** Giant Dynamite or Hercules, and Black Blasting.

CURTISS & HARVEY,

London, Diamond Grain, for latter will establish agencies.

Colt 41 cal. House Revolvers. $2.00.

Agency of **Union Metallic Ammunition Co.'s** goods.

Bar and Pig Lead. **Rifles**—Flobert, Cap, Saloon, Winchester, Sharp's, Remington and others.

Liberal terms granted to time and to cash buyers.

CINCINNATI, OHIO,

B. KITTREDGE & CO.

GUN POWDER.

Laflin & Rand Powder Co.

No. 99 Murray Street, New York,

Manufacture and sell the following celebrated brands of Sporting Powder known everywhere as

ORANGE LIGHTNING,
ORANGE DUCKING,
ORANGE RIFLE

more popular than any Powder now in use.

Blasting Powder and Electrical Blasting Apparatus.

Military Powder on hand and made to order.

SAFETY FUSE, FRICTIONAL & PLATINUM FUSES.

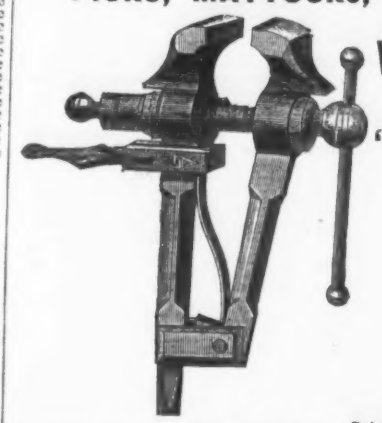
Pamphlets showing size of grain sent free.

HERMANN BOKER & CO.,

101 and 103 Duane Street, New York,

PROPRIETORS OF TRENTON TRADE MARK VISE & TOOL WORKS.

PICKS, MATTOCKS, GRUB HOES, HAMMERS.



WROUGHT IRON STEEL FACE

(P. W. PATTERN.)

"FULLY WARRANTED."



Sole Agents for

H. Boker & Co.'s Celebrated "Tree" Brand Cutlery.
R. Heinisch's Sons Unrivalled Shears, Trimmers, Scissors, Japanned and Nickled.
Ward & Payne's Sheep Shears. **Peugeot Brothers' Horse Clippers.**

J. W. GARDNER'S

Unequaled and **"Warranted Superior to All"**

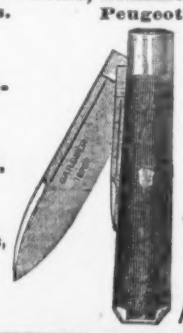
Pocket Knives and Barlows.

Also a full stock of

Geo. Wostenholm & Sons', Wade & Butcher's,

Manhattan and O. K.

POCKET CUTLERY & RAZORS.



W. Butcher's Files and Tools.

LAMSON & GOODNOW MFG. CO.

TABLE CUTLERY,

Guns and Pistols

FISHING TACKLE,

Arms and Ammunition.

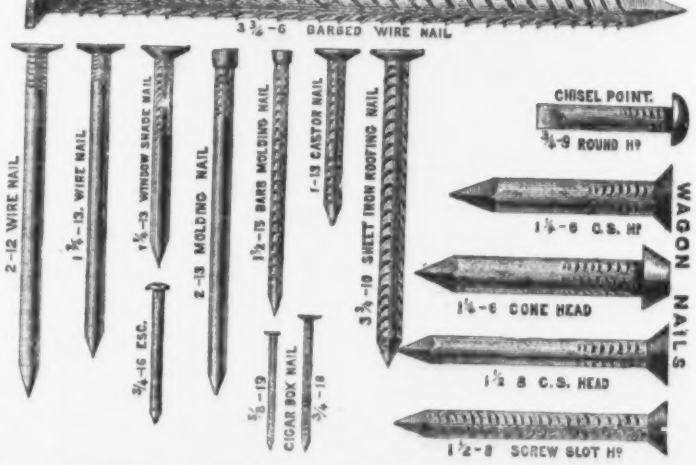
JOHN CHATILLON & SONS

MANUFACTURERS OF

BALANCES AND SCALES

OF EVERY DESCRIPTION

89 91 93 Cliff St. NEW YORK



WIRE NAILS.

Steel, Iron and Brass Nails and Barbed Nails

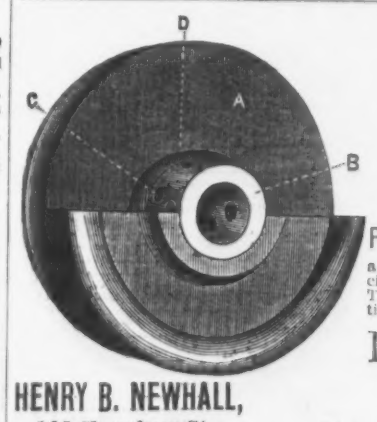
Of every kind.

Roofing and Moulding Nails, Escutcheon Pins, Chair and Caster Nails, Cigar Box and Window Shade Nails, Wagon and Boat Nails.

Manufactured by

THE HP NAIL COMPANY,

Cleveland, Ohio.





These cuts represent an iron sheave with our new

Phosphor-Bronze Self-Lubricating Bushing,

a portion of the sheave being removed to show the principle; also the Bushing as applied to lignumvitæ sheaves. They are by far the best bushings yet out. Write for particulars.

Penfield Block Works,

Lockport, N. Y.

ALL KINDS OF TACKLE BLOCKS.

HENRY B. NEWHALL,

105 Chambers St.,

New York Agent.



Beardsley Scythe Co.,

Manufacturers of

GRASS, GRAIN & BUSH SCYTHES,

Hay Knives & Corn Knives.

West Winsted, Conn.

See our advertisement in *The Iron Age* first issue of each month.

THE CHICAGO
GALVANIZED WIRE FENCE Co.
CHICAGO ILL.

TRADE MARK.

UNION IS STRENGTH.
Soldered Together
FROM
END TO END

MADE FROM
STEEL WIRE
TWISTED BEFORE GALVANIZING
THEREBY ADDING TO ITS
STRENGTH AND DURABILITY.

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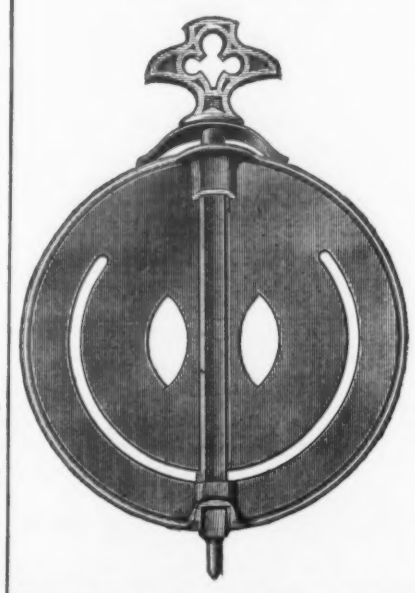
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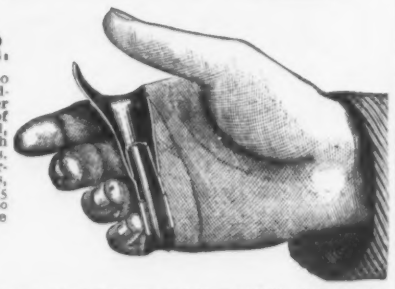


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One-third page	7.00	7.50	8.00	9.00	10.00	12.00	14.00
Quarter page	5.60	6.00	6.40	7.25	8.00	9.60	11.20
One-sixth page	3.95	4.25	4.50	5.10	5.65	6.75	7.75
One-eighth page	3.15	3.40	3.60	4.10	4.50	5.40	6.15
One-sixteenth page	1.75	1.90	2.00	2.25	2.50	3.00	3.50

SPECIAL ISSUES.

In the spring and autumn of each year there is published a Special Issue, the circulation of which is not less than **Twelve Thousand (12,000)** copies.

THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, **presented free to every Subscriber to the IRONMONGER AND METAL TRADES' ADVERTISER.** It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:

SEPTEMBER 18, OCTOBER 16, NOVEMBER 13, DECEMBER 11, JANUARY 8, 1881, FEBRUARY 5, MARCH 5, APRIL 2 and 30, MAY 28, JUNE 25
JULY 23, AUGUST 20

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach out in the native language of eighty millions of *German*, forty-two millions of *French*, twenty-eight millions of *Italian*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in *any* language at the following

MODERATE TARIFF.

Size of Page—13¼ Inches Deep by 9¼ Inches Wide.

	13 INSERTIONS, each net.	7 INSERTIONS, each net.	3 INSERTIONS, each net.
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One page	$30.00	$33.75	$37.50
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One-third page	12.50	14.10	15.65
Quarter page	$10.00	$11.25	$12.50
One-sixth page	7.50	8.45	9.40
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Advertisers will do well to use illustrations freely. Where economy of space is an object, a left page illustrated and described in one language can be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.

B. KREISCHER & SONS,

FIRE BRICK.

BEST AND CHEAPEST.

Established 1845.

Office, foot of Houston Street, East River, NEW YORK.

NEWTON & CO.,

ALBANY, N. Y., Manufacturers of

FIRE BRICK

Stove Linings,

Range and Heater Linings

Cylinder Brick, &c., &c.

M. D. Valentine & Bro

Manufacturers of

FIRE BRICK

And Furnace Blocks

DRAIN PIPE & LAND TILE.

Woodbridge, - - - N. J.

BORGNER & O'BRIEN,

Manufacturers

FIRE BRICK

AND

Edge Pressed Furnace Blocks,

CLAY RETORTS, TILES, &c.,

Twenty-third Street,

Above Race, *PHILADELPHIA.*

Twenty years' practical Experience.

PERTH AMBOY TERRA COTTA CO.,

Successors to

A. HALL & SONS, Perth Amboy, N. J.,

ARCHITECTURAL TERRA COTTA

AND

FIRE BRICK.

170 Broadway, NEW YORK.

BROOKLYN

Clay Retort and Fire Brick Works,

(EDWARD D. WHITE & CO.)

Manufacturers of Clay Retorts, Fire Brick, Gas House and other Tile.

VAN DYKE, EL ZABETH, RICHARDS & PARTITION STS.

Office, 88 Van Dyke St., Brooklyn, N. Y.

Watson Fire Brick Manufactory,

ESTABLISHED 1856.

JOHN R. WATSON, Perth Amboy, New Jersey.

Manufacturer of

FIRE BRICK,

For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.

Fire Clays, Fire Sand, and Kaolin for Sale.

HENRY MAURER,

Proprietor of the

Excelsior Fire Brick & Clay Retort Works,

Manufacturer of FIRE BRICK, HOLLOW BRICK AND CLAY RETORTS.

WORKS: PERTH AMBOY, NEW JERSEY.

Office & Depot, 418 to 422 East 23d St., N. Y.

TROY FIRE BRICK WORKS,

Troy, N. Y.,

JAMES OSTRANDER & SON,

ESTABLISHED 1848,

Manufacturers of

FIRE BRICK,

Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and Dealers in Woodbridge Fire Clay and Sand, and Staten Island Kaolin.

Established 1864.

GARDNER BROTHERS,

Manufacturers of

STANDARD SAVAGE FIRE BRICK, TILE & FURNACE BLOCKS,

OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings, and Miners and Shippers of Fire Clay.

OFFICE: 116 Smithfield St., Pittsburgh, Pa.
WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

HALL & SONS,

FIRE BRICK,

Buffalo, N. Y.

MILLER'S BRICK PRESSES

(Established 1844),

FIRE and RED BRICK,

And Brickmakers' Tools in General.

SAML. P. MILLER & SON,

309 South 5th St., Philadelphia.

Watchman's Improved Time Detector, with Safety Lock Attachment.

Patented 1871-6-7.



Beware of infringements. This instrument is supplied with 12 keys for 12 different stations. Invaluable for all concerns employing night watchmen. Send for circulars to

E. IMHAUSER,

222 Broadway, N. Y.

P. O. Box 2675.

HENRY DISSTON & SONS,

KEYSTONE SAW, TOOL, STEEL & FILE WORKS,

Front & Laurel Sts., PHILADELPHIA.



Great American One-Man Cross-Cut Saw,

With Supplementary Handle.

PATENTED JUNE 27, 1876, OCTOBER 4, 1870.

The above cut represents our new and improved method of changing the extra handle to either end, thus making a One-Man Saw so it can be operated by two men if desired. The extra handle can be placed at any distance from the regular handle, as shown in the cut, thus suiting the option of the operator. The **"Great American" One-Man Cross-Cut Saws** are made and ground on the same principle as our No. 7 Hand Saws. We have lately improved the file for keeping this tooth in order, and it should be ordered with saws.

COLEMAN EAGLE BOLT WORKS

ESTABLISHED 1845.

WELSH & LEA.

NORWAY IRON CARRIAGE & TIRE BOLTS,

AXLE CLIPS, &c.

Highest and only Awards and Medals, Philadelphia, 1876, and Paris, 1878.

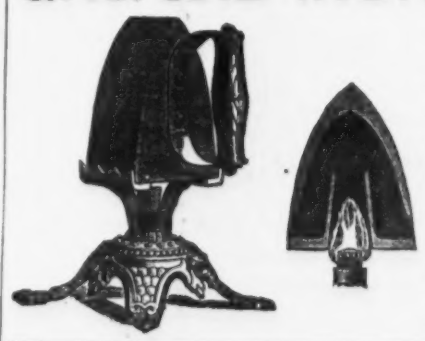
WORKS, Columbia Avenue, Hancock and Mascher Streets.

OFFICE, 145 Columbia Avenue (late 2030 Arch St.)

PHILADELPHIA, U. S. A.

THE DUPLEX

GAS SAD IRON AND STOVE,



For Laundries, Manufactories and for Family use. Absolutely Clean. No Moving Parts to Damage or Repair.

The accompanying wood cuts represent a section of our Patent Iron, showing the arrangement of Flues, and also a view of the Iron in position on the stand which contains the Gas Heating Burner. The Duplex Gas Iron being heated from within, remains always clean on the outside, and cannot soil the most delicate fabric it may be used upon. The Stand and Burner can be used as a Stove for cooking when the Irons are not in use. Our Patent Sad Irons have a polished wooden handle, and require no holder. They can be heated in six minutes, using only half a cubic foot of gas, and when the heat has to be renewed it is done in half the time and with half the gas.

PRICE PER SET.

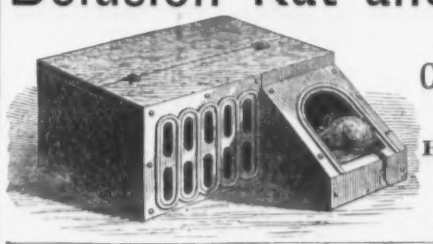
Two 7-lb. Irons, polished, and Stove, - - - - $3.00
Two 7-lb. Irons, nickel-plated, and Stove, - - 3.75

CHALFANT MFG. CO.,

Proprietors and Manufacturers, 435 Arch Street, Phila.

Send for Discounts.

Delusion Rat and Mouse Trap,



Formerly manufactured by

CLAUDIUS JONES & CO.,

At Bridgeport, Conn.,

Have Removed to ERIE, PA.

This is the most successful Rat and Mouse Catcher on the market.

Send for Price Lists.

THE SECURITY BLIND FAST CO.,

Manufacturers of

PAT. BLIND FASTS, WROUGHT IRON BLIND HINGES, WINDOW SPRINGS

Contracts for Hardware Specialties (wrought and malleable iron) executed promptly.
Correspondence solicited with and estimates furnished to responsible parties.

19 Calender Street, Providence, R. I.

PURE SILICA FIRE BRICK,

MADE BY THE

Landore Siemens Company,

Specially for OPEN-HEARTH FURNACES.

More "heats" obtained from them than from any other Bricks known.

Imported, to order only, by

PHILIP S. JUSTICE, Sole Agent in United States,

14 NORTH FIFTH STREET, PHILADELPHIA.

John T. Lewis & Bros.

No. 231 South Front St.,

PHILADELPHIA.



TRADE MARK.

MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil,

AND PAINTERS' COLORS.

Brooklyn White Lead Co.



TRADE MARK

White Lead, Red Lead & Litharge.

No. 182 Front Street, NEW YORK,

JOHN JEWETT & SONS,

Manufacturers of the well-known brand of

WHITE LEAD.



TRADE MARK.

ALSO MANUFACTURERS OF

LINSEED OIL.

182 Front Street, NEW YORK.



TRADE MARK.

The Atlantic White Lead and Linseed Oil Co.,

MANUFACTURERS OF

White Lead (Atlantic), Red Lead, Litharge & Linseed Oil.

ROBERT COLGATE & CO.,

287 Pearl Street, New York.

Bergen Port Spelter

MINES: Lehigh Valley, Pa. WORKS & FURNACES Bergen Port, N. J.

The only Miners and Manufacturers of

PURE

LEHIGH SPELTER

From Lehigh Ore.

Especially adapted for

Cartridge Metal and German Silver.

Also manufacturers of

BERGEN PORT OXIDE ZINC.

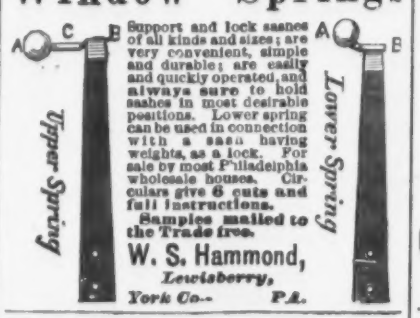
superior for LIQUID PAINT on account of its body and wearing properties.

F. OSGOOD & CO., Proprietors.

E. A. FISHER, Agent, 13 Burling Slip, N. Y.

HAMMOND'S

Window Springs



Support and lock sashes of all kinds and sizes; are very convenient, simple and durable; are easily and quickly operated, and always sure to hold sashes in most desirable positions. Lower spring can be used in connection with a sash having weights, as a lock. For sale by most Philadelphia wholesale houses. Circulars give 6 cuts and full instructions.

Samples mailed to the Trade free.

W. S. Hammond,

Lewisberry,

York Co., PA.

Keystone Screw Co.



17th and Venango Streets,

PHILADELPHIA.

J. BILLERBECK

Manufacturer of

Iron Gimlet-Pointed Wood Screws

THOMAS MORTON,

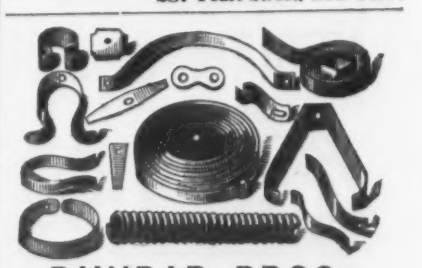
65 Elizabeth Street, New York,

Manufacturer of Copper and Iron

SASH CHAINS,

With Patent Attachments.

Warranted for years. Chains of any size made to order, and trade supplied with liberal discount.



DUNBAR BROS.,

Manufacturers of

Clock Springs and Small Springs

of every description, from best Cast Steel,

BRISTOL, CONN.

W. & J. TIEBOUT,

Manufacturers of

Brass, Galvanized & Ship Chandlery Hardware,

No. 33 Chambers St., New York.

---

14 STOP ORGANS. SUB BASS & Oct. Coupler, 4 Set Reeds, $65. Pianos, $125 and upward; sent on trial. Catalogue free. Address DANIEL F. BEATTY, Washington, N. J.

PHILADELPHIA.

(Corrected Weekly by Lloyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ₩ ℔ 10¾c
Over 250 lbs 11c
Eagle (American) ..... 100 ₩ ℔—dis 20 %

Apple Parers.
Keystone Centennial, 1875 ..... $4.25
" " 1877 ..... 5.00
Reading No. 72 ..... 5.00
" No. 74 ..... 6.00
" No. 75 ..... 7.00
" No. 78 ..... 7.50
Rotary Peach Parers 14.50
Lots of 10 to 25 dozen special prices.

Axes.
Hunt's Kentucky and Yankee ..... per doz $11.00
Mann's Red Warrior ..... " 11.00
Richland Chief ..... " 10.00
Beveled Axes ..... add 50c " net
Double Bit Axes ..... net " 22.00

Augers and Auger Bits.—New List January 1.
Bates' Nut Augers ..... dis 40 %
Cook's Augers ..... dis 40&10 %
Watrous' Ship Augers ..... dis 15 %
Benjamin Pierce Auger Bits ..... dis 35 %
Griswold Auger Bits ..... dis 40 %
Cook's " ..... dis 40&10 %
Jennings' " ..... dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz. ..dis 24&10 %
Stearns' Pat. Hol. Augers, list $48 ₩ doz. ....dis 20&10

Balances.
Light and Common ..... dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ....dis 60&10 %
Swiss Pattern Hand Bells ..... low list dis 40&10 %
Connell's Door Bells ..... dis 35 %
Gt. Western & Kentucky Cow, new list ..... dis 50 %

Bolt and Rivet Clippers.
Chambers' No. 1. for ⅝ bolt ..... each, $7.50 } dis 15 %
" No. 2, " ¾ " ..... " 9.00 }
" No. 3. " ⅞ " ..... " 12.00 }

Boring Machines.
Upright, without Augers ..... List 5.50 } dis 40 %
Angular, without Augers ..... " 6.75 }

Bolts.—Eastern Carriage Bolts ..... dis 75 & 10%
Philadelphia " ..... new list dis 60&10 %
Stanley, Wrought Shutter ..... dis 50&10 %

Braces.—Barber's ..... dis 40&5 %
Backus ..... dis 60 %
Spoffard ..... dis 50&10 %
American Ball ..... dis 40&10 %

Butts.—Cast Fast Joint, Narrow ..... dis 40&10 %
" " Broad ..... dis 40&10 %
Cast Loose Joint, Narrow ..... dis 50&10 %
" " Broad ..... dis 50&10 %
" Acorn, Loose Pin ..... dis 50&10 %
" " Jap'd ..... dis 50&10 %
" Mayer's Loose Joint ..... dis 45&10 %
Wrought Loose Pin ..... dis 50&10 %
" Table Hinges and Back Flaps ..... dis 40&10 %
" Narrow, Fast ..... dis 40&10 %
" Loose Joint ..... dis 50&10 %

Blind Butts.
Parker ..... dis 60, 10&10 %
Clark ..... dis 60, 10&10 %
Shepard ..... dis 60, 10&10 %
Lull & Porter ..... dis 60&10 %
Huffer's ..... dis 45 %

Chains.—German Halter and Coil, new list Oct. 22, 1879 ..... dis 40 %
Galvanized Pump ..... ₩ ℔ 10c net
Best Proof Coil Chain—English.

₩ ℔	12	10	8¼	7⅛	7¼	7	gold
	5-16	¾	7-16	½	9-16	⅝	in.

Chisels.—Socket Framing ..... dis 65&10 %
Socket Firmer ..... dis 65&10 %
Butcher's ..... $4.00 to 2 gold

Casters.—Bed (new list July 1, 1880) ..... dis 25&10 %
Plate ..... dis 25&10 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ..... dis 35 %
Enterprise ..... dis 20 %

Cutlery.—Walden Pocket ..... new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ..... dis 65&10 %
Adjustable Handle ..... dis 15 %

Fry Pans.
Tinned ..... dis 45 %
₩ doz. $3.40 4.00 4.50 5.00 5.40 6.40 7.50 9.00 10.00
No. 0 1 2 3 4 5 6 7 8
Burnished ..... dis 55 %
₩ doz. $3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
No. 0 1 2 3 4 5 6 7 8

Files.
Nicholson ..... dis 30 %
Disston ..... dis 30 %
Butcher ..... $4.50 ₴
Spencer ..... $4.50 @ 4.75 ₴

Fluting Machines.
Eagle—3⅛ in. roll ..... each, $2.15 } dis 10 %
" —3¼ in. roll ..... " 2.85 }
Crown—3⅛ in. roll ..... " 3.40 }
" —5 in. roll ..... " 4.00 } dis 10 %
" —8 in. roll ..... " 5.50 }
Geneva Fluter ..... dis 20 %
Favorite com. Fluter & Sad Iron ..... ₩ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ..... dis 30 %

Hatchets.
Yerkes & Plumb, new list ..... dis 30 %
Hunt ..... dis 15&5 %

Hinges.
Strap and T ..... dis 45&10 %

Horse Nails.

	Nos.	5	6	7	8	9	10
Ausable		30	27	25	24	23	22
" Pol'ed & P'd and Blued and Pointed		31	28	26	25	24	23
Globe	New list.	28	25	23	22	21	20
Clinton		22	20	19	18	17	
" Polished & Pointed		23	21	20	19	18	

Porter, all sizes ..... ₩ ℔ 15c. net
Discount on Ausable and Clinton, 20 %; Globe, 10%

Locks and Knobs.
Branford ..... dis 50&2 %
Gaylord Cabinet ..... dis 10&2 % cash
American Padlocks ..... dis 4 &20 % cash
Scandinavian Padlocks ..... dis 50 %
₩ doz. $5.00 5.50 6.50 7.50 8.50 10.00 12.50 } dis 60 %
No. 57 58 59 60 61 62 63 }
₩ doz. $18.00 26.00 33.00 } dis 60 %
No. 64 65 66 }

Lanterns.
Nail City ..... ₩ doz, $9.00 net
Square Candle and Oil ..... ₩ doz
Tubular ..... No. 0, $2.65; No. 1, $10.15 ₩ doz net
Globes, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania ..... dis 30&10 %
Philadelphia ..... dis 30&10 %
Excelsior ..... dis 30&10 %

Lawn and Garden Pumps.
Holland Patent ..... List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ..... new list
Pennsylvania Pattern ..... per doz

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets ....dis 20 %
Stebbins' Gates ..... dis 50&10 %
Lincoln's " ..... dis 50&10 %
Landers, Frary & Clark's Petroleum ..... dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880 ..... dis 40 %
Cork Lined " ..... dis 70 %

Meat Cutters.—Pennsylvania Meat Cutter ..dis 50 %
Dixon's ..... dis 30 %
Woodruff ..... dis 30 %
Stowe ..... dis 30 %
Hale's ..... new list, dis 40, 2&10 cash
American ..... dis 25 %
Stuffers ..... dis 25 %
Enterprise Stuffers ..... dis 20 %

Planes.—Ohio Tool Co ..... dis 25 %
Scioto ..... dis 30 % } 10 % cash
Auburn ..... dis 25 % } in 10 days.
New York Tool Co ..... dis 30 %
Bailey ..... dis 20&10 %

Plane Irons.—Ohio Tool Co ..... dis 10&5 %
Butcher's ..... £, $5.50

Plumbs and Levels.
Stanley's Adjustable ..... dis 60&10 %
" Non-Adjustable ..... dis 60&10 %

Picks.—New list ..... dis 40 %

Pumps.—Bickford ..... $5.00, dis 10 %

Rules.—Stanley Boxwood ..... dis 60 %10 %
Stanley Ivory ..... dis 40&10 %

Steelyards.—Hart's Pattern ..... dis 30&10 %
₩ doz. $14.50 17.75 21.00 26.50 31.00 35.50
Lbs 50 100 150 200 250 300
American Pattern ..... dis 30&10 %
₩ doz. $8.00 10.25 13.75 16.50 18.75 19.50
Lbs 50 100 150 200 250 300

Squares.
Steel and Iron ..... ₩ ..... dis 40 %; full case, dis 50&10 %
Try Squares, Stanley ..... dis 45&10 %
Disston's Try Squares ..... dis 50 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ..... ₩ doz $9.00 net
Clipper No. 10, Bronzed Blade, Boxed and Sharpened ..... ₩ doz $8.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened ..... ₩ doz $8.00 net

Saws.—Disston's Hand, Panel and Rip ..... dis 20 %
Disston's Circular ..... dis 35 %
" Cross-Cut No. 2, Plain Tooth ..... dis 25%
" " Patent Tooth ..... dis 25%
" " Champion Tooth ..... dis 25%
Boynton's Lightning Cross Cut, new list ..... dis 20 %
" One Man, all lengths, " ..... dis 20 %
" Billet Webs, 30 inch, " ..... dis 25 %
" Lightning Buck Saws, cross bar ..... dis 25 %
" " Hand, Panel and Rip ..... dis 25 %

Shovels and Spades.
Rowland ..... dis 40&10 %
Oliver Ames & Sons, new list ..... dis 10 %
Grimth ..... dis 40&10 %

Sad Irons.—4 to 10 lbs ..... ₩ ℔ 40
Mrs. Potts' Patent ..... dis 30 %

Stone.—Arkansas Oil Stone ..... ₩ ℔ $2.00 net
Washita Extra ..... ₩ ℔ 270 net
" No. 1 ..... " 180
" No. 2 ..... " 150
" Slips ..... " 300
" Axe ..... " 180 net
Turkey Oil Stone No. 1 ..... ₩ ℔ $1.00 net
Hindostan Oil Stone No. 1 ..... ₩ ℔ 60 } dis 30 & 10 %
" Axe Stone ..... " 80 }
" Slips ..... " 100 }

Screws.
Flat Head Iron ..... dis 45 %
" Brass ..... dis 35 %
Round Head Brass ..... dis 30 %
" Iron ..... dis 25 %

Spoons.
Plated ..... dis 33⅓&5 %
German Silver ..... dis 25&10 %
Britannia, Boardman's ..... dis 55 %
" Parker's ..... dis 55 %
Tinned ..... dis 10 %

Springs.—Torrey ..... ₩ doz $2.10 10 %
Philadelphia ..... 5 in., $5.00; 3 in., $7.00 ₩ doz. dis 25 %
Chatfield No. 1, $2.75; 2, $3.25; 3, $5.00 ₩ doz., dis 33⅓%
Gem Coil No. 1, Large Jap'd ..... ₩ doz $3.50 } net
" No. 2, Medium Jap'd ..... " 2.50 }
" No. 3, Small Jap'd ..... " 2.00 }

Stocks and Dies ..... dis 10&5 %

Stove Polish.—Gem ..... ₩ gross, $4.50, dis 5 %
Dixon ..... " 5.75 net
Onyx ..... " $4.00 @ 4.25 net

Tacks, Brads, &c. ..... dis 20&10 %
Shoe Nails—4-8, 9c.; 3½-8, 100 ₩ ℔ ..... 10 %
Double Pointed Tacks ..... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ..... dis 30 %
Im. Oneida—Newhouse list, first qual ..... dis 50 %

Vises.—Solid Box, Trenton new list ..... dis 25 %

Wrenches.—Agricultural ..... dis 60&10 %
Coes' Genuine ..... dis 50 %
" " Mechanics' ..... dis 50&10 %
" " Mail. Bar ..... dis 70 %
Philada. Tool Co., Duplex ..... dis

Wire.
Bright or Ann'd, No. 0 to 18 ..... dis 45 to 50 %
" " No. 19 to 26 ..... dis 52½ to 57 %
" " No. 27 to 36 ..... dis 60 to 65 %
Coppered, 0 to 18 ..... dis 40 to 45 %
Tinned Broom Wire ..... dis 47½ to 50 %
Galvanized No. 7 to 18 ..... Market List, dis 35 to 37½ %

Wringers.
Peerless No. 2½ $60.00
" " 2 ..... 63.00
Universal, No. 2½ 60.00
" " 2 ..... 63.00
Novelty, No. 10 ..... 60.00
" " 2 ..... 63.00

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

Flat Bar.

1½ to 4 by ⅜ to 1 inch	2.50
4¼ to 6 by ⅜ to 1 "	2.60
1⅝ to 6 by 1⅛ to 1¼ "	2.90
1¼ and 1⅜ by ⅜ to ¾ "	2.60
1 and 1⅛ by ⅜ to ¾ "	2.70
⅝, ¾ and ⅞ by ⅜ to ⅝ inch	2.90

Rounds and Squares.

1 to 1⅞	2.50	⅝ to 9-16	2.70
2 to 2¾	2.70	⅝ to 7-16	2.90
2¾ to 3¼	3.00	½	3.10
3⅜ to 4	3.50	5-16	3.30
4¼ to 5	4.00	¼	3.50
¾ to ⅞	2.60	3-16	5.50

Oval Iron.

⅞ to 1¼	2.90	⅜	3.30
⅝ to ¾	3.10	⅜	3.70

Half Oval and Half Round.

⅞ to 1¼ inch	2.20	⅜ inch	4.00
⅝ to ¾ "	3.70	⅜ "	5.50

Horse Shoe.

⅜ to 1¼ by 5-16 to ⅞ inch 3.50

Wagon Box Iron.

⅞ Inch, Nos. 13 and 14			3.70
⅞ " " 11 and 12			3.50
¾ " " 13 and 14			4.00
¾ " " 11 and 12			3.80
⅝ " " 13 and 14			4.40
⅝ " " 11 and 12			4.10

Heavy Bands.

3½ to 6	by ¼ and 5-16 inch		2.70
1¾ to 3¼	by ¼ and 5-15 "		2.70
1 to 1¾	by ¼ and 5-16 "		2.80
¾ to ⅞	by ¼ and 5-16 "		3.00
¾ and ⅛	by ¼ and 5-16 "		3.50

Light Bands.

1¼ to 6	by ⅛ to 3-16		3.00
1¼ to 6	by Nos. 11 and 12		3.10
1 to 1¾	by ¼ to 3-16		3.10
1 to 1¾	by Nos. 11 and 12		3.30
⅞ and 13-16	by ⅛ to 3-16		3.40
⅞ and 13-16	by Nos. 11 and 12		3.50
¾ and 11-16	by ⅛ to 3-16		3.70
¾ and 11-16	by Nos. 11 and 12		3.80
⅝ and 9-16	by ⅛ to 3 16		4.00
⅝ and 9-16	by Nos. 11 and 12		4.10
½ inch	by ⅛ and 3-16		4.30
½ inch	by Nos. 11 and 12		4.40

Hoop Iron.

1¼ to 4, Nos. 13, 14 and 15			3.30
1¼ to 2, Nos. 16, 17 and 18			3.40
1¼ to 2, No. 19			3.50
1¼ to 2, No. 20			3.60
1¼ to 2, No. 21			3.70
1¼ to 2, No. 22			3.80
15-16, 1, and 1¼, Nos. 13, 14 and 15			3.50
15-16, 1, and 1¼, Nos. 16, 17 and 18			3.60
15-16, 1, and 1¼, Nos. 19 and 20			3.70
15-16, 1, and 1¼, No. 21			3.80
15-16, 1, and 1¼, No. 22			3.90
⅞, Nos. 13, 14 and 15			3.70
⅞, Nos. 16, 17 and 18			3.80
⅞, Nos. 19 and 20			3.90
⅞, No. 21			4.00
⅞, No. 22			4.10
13-16, Nos. 13, 14 and 15			3.90
13-16, Nos. 16, 17 and 18			4.00
13-16, Nos. 19 and 20			4.10
13-16, No. 21			4.20
13-16, No. 22			4.30
¾, Nos. 13, 14 and 15			4.00
¾, Nos. 16, 17 and 18			4.10
¾, Nos. 19 and 20			4.20
¾, No. 21			4.30
¾, No. 22			4.40
11-16, Nos. 13, 14 and 15			4.20
11-16, Nos. 16, 17 and 18			4.30
11-16, Nos. 19 and 20			4.40
11-16, No. 21			4.50
11-16, No. 22			4.60
⅝, Nos. 13, 14 and 15			4.40
⅝, Nos. 16, 17 and 18			4.50
⅝, Nos. 19 and 20			4.60
⅝, No. 21			4.70
⅝, No. 22			4.80
9-16, Nos. 13, 14 and 15			4.90
9-16, Nos. 16, 17 and 18			5.00
9-16, Nos. 19 and 20			5.10
9-16, No. 21			4.90
9-16, No. 22			5.00
9-16, No. 23			5.10
½ inch, Nos. 13, 14 and 15			4.80
½ " Nos. 16, 17 and 18			4.90
½ " Nos. 19 and 20			5.10
½ " No. 21			5.20
½ " No. 22			5.30
½ " No. 23			5.40

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest in list.

1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.

1¼ to 2 in., cut to length.

9 to 11 lbs, per set of 6 hoops	3.50
8 lbs. and less than 9 lbs. per set of 6 hoops	3.60
Less than 8 lbs. per set of 6 hoops	3.80

Extras for Cutting to Length all Preceding Iron.
All Iron, including Tire 2.10c

Tank Iron.

No. 9 and heavier	3.30
Plow Slabs	3.50
" Wings	3.80

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.40	5.00	6.50
No. 15 to 17	3.80	5.30	6.80
No. 18 to 21	4.10	5.60	7.10
No. 22 to 24	4.30	5.80	7.30
No. 25 & 26	4.50	6.00	7.50
No. 27	4.70	6.20	7.70
No. 28	4.10	6.80	8.10

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.
1st quality (A) ..... 12c | 2d quality (B) 10½c

Galvanized Iron—Juniata.

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Current discount to jobbers, 1st quality, 27½ %; 2d quality, 37½ %.

Coal Screen Iron.

4¾ by ¾ by 5-16	2.0c	1 by ¾ by 5-16	3.80

Angle Iron.

2½, 3, 3½ and 4 inch	3.30
1½, 1¾, 2 and 2¼ inch	3.40
1¼ inch	3.50
1 "	3.60
1¼ by 1 inch, for Plow Handles	3.80
1¼ by ¾ " " "	3.80
1⅛ by ¾ " " "	3.90

T Rail.

8 lbs. to the yard	2.90	20 lbs. to the yard	2.90
12 " "	2.90	25 " "	2.90
16 " "	2.90	40 " "	2.90

Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 25 and 30-lb. Rail, 50c each; 40 lb., 60c each.
3¼ by ¾ and ⅝ Spikes for 20 and 28-lb. Rail 4.50
2⅞ and 3 by ⅝ " " 12 and 16-lb. " 4.70
2½ by 5-16 " " 8-lb. Rail 5.40

Flat Rails.—Punched and Countersunk.

1¼ to 2 by ¼ to ⅝ inch	3.00
1½ by ¾ and 7-16 inch	3.20
1¾ by ¾, 7-16 and ½ inch	3.50

Juniata Nail Rods 6.40
Norway 8.00
Guard Iron, ¼x4x3⅝ and ¼x4x4¾ 4.00
" ⅜x3½-16 and ⅜x3¾ 4.20
Drag Bars 3.30
Dropper Bars 3.80
Cylinder and Landside Iron 3.20
Plow Beam Iron 3.00

Nails.

10d to 60d $3.00

Best Quality Refined Cast Steel.

Square, Flat, Octagon and Round.

⅛ to 2 inches, inclusive	13 c
5-16 and 2¼ to 3 inches	14 c
¼ and 3¼ to 4 "	15 c
7-32 and 4¼ to 5 "	16 c
3-16 and 5¼ to 6 "	19 c
5-32 inch	23 c
⅛ inch	31 c
Oil Well Steel Forgings	21½c

No grade of Crucible Tool Steel shall be sold for less than above prices.

Machinery Steel.

	Crucible.	Bessemer & Open Hearth.
Ordinary Sizes, ⅛ to 2 inch Round	7½c	6c
5-16 and 2¼ to 3 inches	8½c	7c
¼ and 3¼ to 6 "	9½c	8c
7-32 inch	10½c	9c
3-16 "	12½c	11c

Square, Flat and Octagon, ½c extra throughout the list.
Cut to specified lengths, ½c extra.

Hammer Cast Steel.

2 inches and under	8½c
Above 2 inches	9½c

Sheet Steel.—Crucible.

Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge.... 13c	11c	9c	6½c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.

Auger and Auger Bit	8½c
Axle Steel for carriages and wagons	8½c
Frog Points and Plates	10c
" Side Bars	8c
Pick, plain	9c
" and Mattock, beveled	9c
Skate Steel	8½c
Table Cutlery	9c
Pike and Cant Hook	9c
Coal and Granite Wedge	9c
Roller	7½c
Spindle, subject to Machinery classification	8½c
Trap Spring Steel	9½c
Forged Crank Pins and Lathe Spindles	10½c
Piston Rods, plain	8c
" forged to shapes	10½c
Slide Bars, plain	8c
" forged to shapes	10½c

Crucible, Open Hearth or Bessemer.

Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick	
Boiler, Fire-Box and Flue Sheets, not less than ⅛ thick	
Circulars and semi-circulars, when ordered separately	
Smoke Stack, to shape	
Locomotive Tank Steel	

File Cast Steel.

Square, Round, Half Round and Flat Bastard, 8-inch and over	9c
Mill Saw, 8-inch and over	9½c
Taper, 3½-inch and over	10½c
Horse and Shoe Rasp	9½c

Spring Cast Steel 7½c
Spiral and Taper, cut to lengths 8c

Tire Cast Steel.

1x¼ and over	8c
1x3-16, ¾x3-16 and ¼	8½c
1 and 13-16x⅛ and 5-32, ⅝x3-16 and 5-32	9c
¾ and ⅝x⅛ and 3-32 and 12 g	9½c
Solid Safe Cast Steel	7½c

Agricultural Implement Cast Steel.

Fork and Rake, Crucible	8½c
Horse Rake Steel, cut to lengths, Crucible	8 c
Hoe, Crucible	8 c
Corn Stalk Cutter, beveled	9 c
Beveled Hoe and Shovel Steel in Bars	9 c
Crucible Plow Steel in slabs	8½c

Bessemer and Open Hearth.

Spring	6½c
" spiral and taper, cut to lengths	6½c
Tire, 3-16 thick and above	5½c
Toe Calk	5½c
Plow	5½c
Axle Billets	5c
Sleigh Shoe	5c
Cutter Shoe, cut to lengths and tapered	6½c
Scythe Back Steel	5c
Grain Drill Bars	8½c
" Points	9½c
Rolling Coulter Blanks, cut and punched	10½c
Thrasher Steel	5½c
" Teeth	6½c
Rolled Hammer Billets	5½c

Where Bessemer or Open-hearth Steel can be used in place of Crucible, the difference in price shall not be greater than 1c. per lb., except where especially provided in the list.

Terms.—Four months; 3 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.

Furnace, Floor and Straightening Plates	2½c
Housings and Castings not otherwise specified	3 c
Guide Plates	3½c
Spindles and coupling boxes	3 c
Sand Rolls and Pinions, large size	3 c
" " small size	3½c
Pipe Mill Castings	5 c
Rolling Mill Castings under 50 lbs	4 c
Spur and Bevel Wheels, large	3½c
" small	4½c
Pulleys up to 30 inches	4½c
" over 30 inches	4½c
Engine Castings, light	4½c
" " heavy	4 c

Chilled Rolls.

6 to 7 in. diam.,		7 to 20 in. long	4½c
8 to 15 in.	"	8 to 40 in. "	4½c
25 to 24 in.	"	15 to 72 in. "	c
14 to 31 in.	"	72 to 108 in. "	5 c

White and Red Lead.

Strictly Pure White Lead in Oil, in kegs, in lots of 500 ℔ and over, 9c; less than 500 ℔, 9¼c in 25 and 50 ℔ Tin Pails, ½c. ₩ ℔ over keg price; 12½ ℔ Tin Pails, 1c ₩ ℔ over keg price; assorted, 1 to 5 ℔, 100 ℔ Cases, 12c.
Dry White Lead..less than 500 lbs..8¾c; over 500 lbs.8½c
Orange Mineral, genuine, in kegs, 10c; in barrels, 9 c
Red Lead, very brilliant, " 7c; " 7½c
Litharge (Potter's Lead) " 8c; " 7½c
Freights equalized with all points.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1% per cent. will be allowed, but not otherwise.

Window Glass.

Per Box of 50 Feet.—Discount 50&10 % on single strength, 60&10 % on double.

Single Strength.

Size.	AA.	A.	B.	C.
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14 50	12.00	
30 x 56 to 34 x 60	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	

Double Strength.

6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 60	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

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WIRE, SHEETS, RODS, BOLTS.

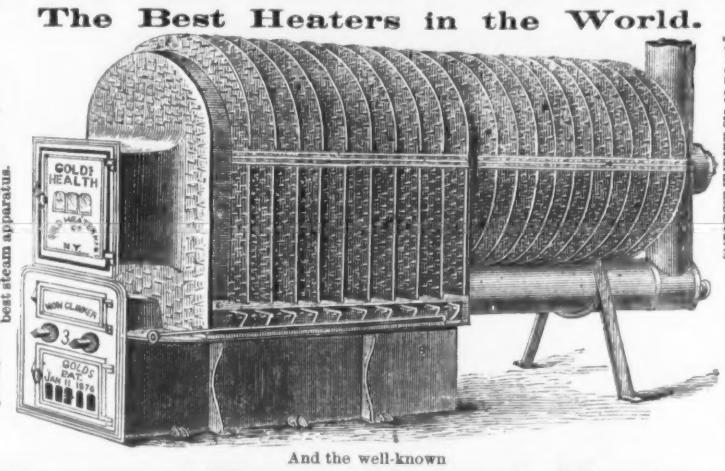


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The only Heaters that produce Pure, healthful, moist, warmed air without evaporation of water, as the heated surface cannot be overheated, and the air is not deprived of its natural moisture.

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Armstrong's Improved Adjustable Stock and Dies FOR PIPE AND BOLTS.



Tapped to the U. S. and Whitworth Standard Gauges. *Adjustable* to all variations in the size of fittings. Can be *resharpened without drawing the temper* by simply grinding them. Possessing practical advantages appreciated by all mechanics. Circular and Price List sent free on application.

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Price, $3.00.

For Light or Heavy Molasses, Oils, Varnishes or other Fluids.

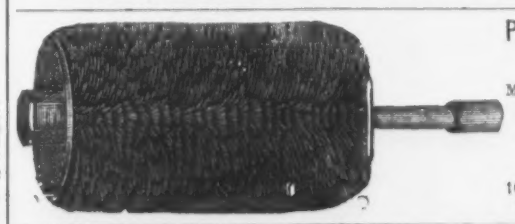
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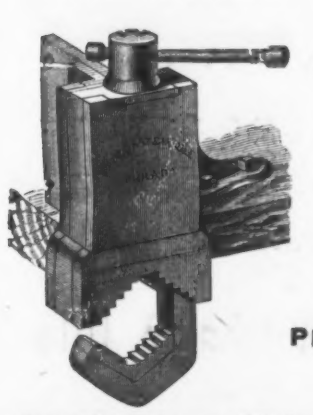
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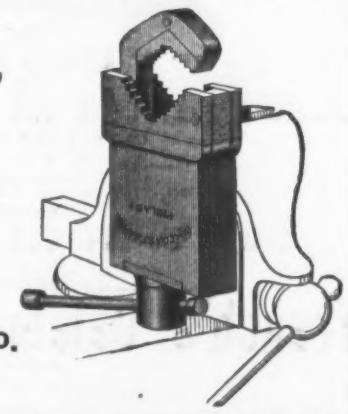


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PRICE, $8.00.

To meet the requirements of the large number of persons who have use for such an article, we invite attention to our Improved Pipe Vise. This Vise can be used either as a permanent fixture to work-bench, attached to angle plate or can (unlike others) be held between the jaws of any Machinist's or Blacksmith's Vise; the movable jaw being OPEN ON SIDE permits work to be gripped at any desired point without slipping it in from end, and allows of FITTINGS BEING HELD securely; the Box is made of Malleable Iron, the Screw of Wrought Iron, and the remainder of Solid Steel throughout. The Steel Gripping Jaws can be duplicated and replaced at any time when worn out. It is a very convenient tool, well adapted to the wants of Plumbers, Pump Fitters, Well-Drivers, and all who have use for a tool that is *strong, light, efficient and cheap* which can be readily carried about with kit of tools.

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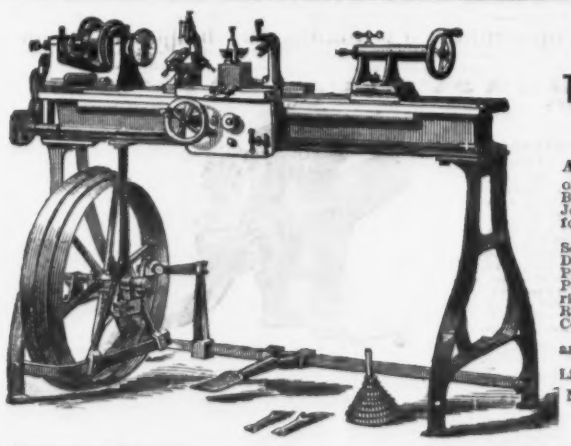
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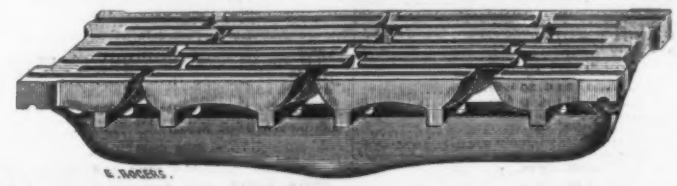
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Sole Agent and Manufacturer of

W. C. WREN'S PATENT GRATE BAR.



This Grate Bar consists of short parallel bars for carrying the coal, mounted above a long supporting bar, extending across the furnace by short transverse plates, holding the short bars, which sustain the heat so far above the supporting bar that it is kept comparatively cool, and is not, therefore, liable to warp, bend or burn. The bars which are subject to the heat, being made in short sections, do not strain the supporting bar. The short bars break joints at the meeting ends to prevent a straight open space across the whole; also to guide the rake used by firemen in cleaning the furnace better than they otherwise would.

We therefore claim the following advantages over other grate bars offered for sale:

1. Great saving in fuel.
2. Such construction as will equalize all strain resulting from expansion and contraction, thus avoiding warping, and thereby insuring long service.
3. Thorough combustion of fuel, owing to the large air spaces exposed.
4. Bars will not weigh more in proportion than the ordinary bar, and in addition to a saving of 25 per cent in fuel, will last much longer than any other bar in use.

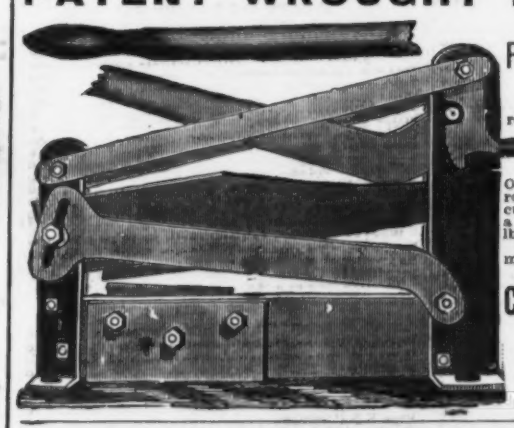
The **WREN GRATE BAR** is in use at the works of the Atlantic Refining Co. and other prominent concerns.

PATENT WROUGHT IRON SHEAR,

With and Without

PUNCH ATTACHMENT,

FOR IRON AND STEEL.



Our No. 103 Machine will cut 4x¾, 1¾ inch round and square and punch ¾-inch hole through ¾-inch iron. Our No. 104 Machine will cut 4x¾, 1 inch round and square and punch ¾-inch hole through ¾-inch iron. Our No. 105 Machine will cut 4x¾, 1¼ inch round and square. Our No. 106 Machine will cut 4x¾ inch round and square. Occupies a space of 8x30 inches, weighs from 300 to 400 lbs., made of wrought iron and steel.

It is built so exceedingly strong that two men cannot injure it. Prices from $30 to $45. Liberal discount to the trade.

CLEVELAND HARDWARE CO.,

CLEVELAND, OHIO,

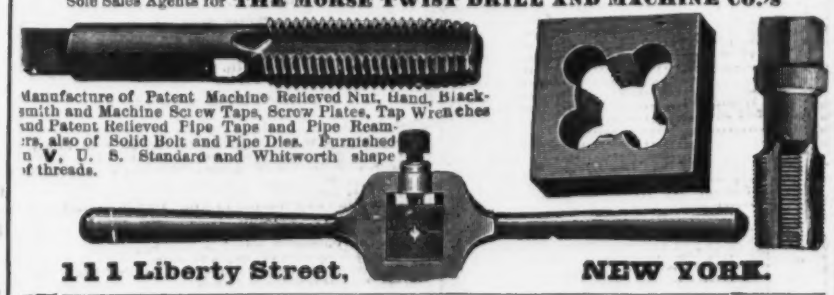
Manufacturers of

STERLING ANTI-FRICTION BARN-DOOR HANGERS.

Send for Illustrated Circular.

H. S. MANNING & CO.,

Sole Sales Agents for THE MORSE TWIST DRILL AND MACHINE CO.'S



Manufacture of Patent Machine Relieved Nut, Hand, Blacksmith and Machine Screw Taps, Screw Plates, Tap Wrenches and Patent Relieved Pipe Taps and Pipe Reamers, also of Solid Bolt and Pipe Dies. Furnished in U. S. Standard and Whitworth shape of threads.

111 Liberty Street, NEW YORK.

"BLAKE'S CHALLENGE" ROCK BREAKER.

Patented November 18, 1879.

BLAKE CRUSHER CO., new Haven, Conn., Sole Makers.

Awarded First-Class Medal of Superiority by the American Institute 1879.

Rapidly superseding all old styles of **Blake Crushers,** on account of its superior strength, efficiency and ease of adjustment. Adopted in preference by leading Mining and Railway companies, and many important cities and towns. Blake Crushers of our older style, containing patented improvements **exclusively our own,** for sale at low figures. The public is cautioned to beware of the representations of certain parties who have **imitated** our patterns of these, **copied our old cuts,** and are advertising **"Blake Crushers" weighing 1300 pounds less than ours,** at same price. For circulars relating to the new **"Blake's Challenge,"** and all older styles of Blake Crushers, address

BLAKE CRUSHER CO., New Haven. Ct.,

Patentees and Original Manufacturers under patents of Eli W. Blake and Theo. A. Blake,

The Farrel Foundry and Machine Co.



View of Rock Breaker.

ANSONIA, CONN.,

Manufacture improved

ROCK & ORE BREAKERS,

(THE "BLAKE" STYLE),

designed for breaking to small pieces and one-third dust all kinds of hard and brittle substances, such as **Quartz, Emery, Gold and Silver Ores, Coal, Plaster, Iron, Copper and Lead Ores;** also, **Stone** for making **Concrete and Railroad Ballast.**



Premium of Excellence, American Institute Fair, 1879.

Twenty years of practical test, at **Home** and **Abroad,** has proven this machine to be the best one ever invented for the purpose. Mr. S. L. MARSDEN, for the past fifteen years connected with the manufacture of these machines, has charge of this department of our works, and will personally superintend their erection within a reasonable circuit. **Chilled Rolls and Rolling Mill Machinery; Power Presses,** single and double acting; also, **Hammers,** Drops and Lifters; **Shafting, Pulleys and Hangers.**



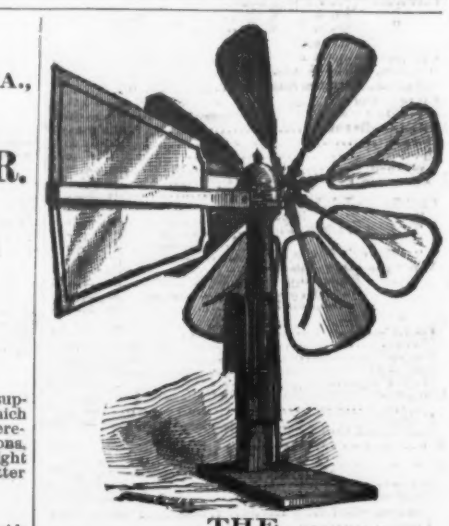
THE E. HORTON & SON CO.,

Windsor Locks, Conn.

From this date a discount of 25 per cent will be made from the price list of

The Horton Lathe and Car Wheel Chuck.

February 1, 1880. Send for Price List.



THE

HARTFORD COMPRESSED AIR PUMP

Water Driven to any Hight and Distance by Compressed Air.

Country Houses Supplied Cheaply and Certainly for Bath Rooms, Water Closets, Hot and Cold Water Faucets, &c. Plenty of Fresh Water for Stock on Farms. The best Pump for Irrigating, supplying Railroad tanks, and for Mining purposes. For Circular and Price list address, EZRA BROOKS, Sec'y and General Manager of The Hartford Compressed Air Pump Co., Hartford, Conn., U. S. A.



PITTSBURCH MFG. CO.

Manufacturers of Nail and Spike Machines, Bolts, Nuts, Washers, Rivets, &c. Castings, Forgings and Blacksmith Work promptly attended to.

OFFICE & WORKS, Railroad St. near 28th., Pittsburgh, Pa.

THE NEW

PULSOMETER



Is more economical in points of original cost, expense for repairs and running expenses, than any other steam pump in the world.

Simple and compact, with no machinery whatever to oil, or get out of order, it stands at the head of all means of elevating water or other liquids by steam. It needs no skilled labor to look after it.

Send for book giving full description, reduced prices and many letters of commendation from leading manufacturers and others throughout the country who are using them.

PULSOMETER STEAM PUMP CO., Sole owners of Hall's Patents in the U. S. 131,515 to 131,543, both inclusive, and

THE NEW PULSOMETER, Office, No. 83 John St., P. O. Box No. 1533, New York City

WILLIAM H. AINEY, Chairman. PETER D. WAGNER, Sec. and Treas.

Mellert Foundry & Machine Co.,

Limited,

Works Established at Reading, Pa., in 1848.)

Manufacturers of

CAST IRON WATER AND GAS PIPE,

With special Castings, Flange Pipe, Water Gates, Fire Hydrants, Lamp Posts, &c. **The Improved Canadian Turbine Water Wheel.** Machinery and Castings of every description for Furnaces, Rolling Mills, Grist and Saw Mills, Mining Pumps, Hoists, &c. Columns, Brackets, Iron Railings, &c.

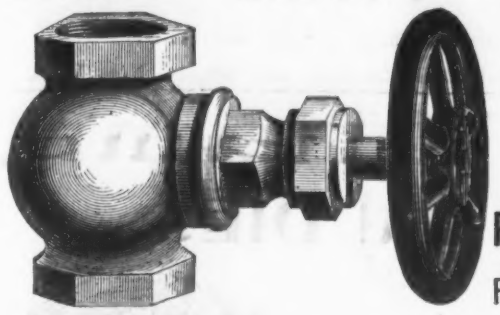
ARNOLD MELLERT, Supt., Reading, Pa.



McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS AND VALVES,



For STEAM, WATER and GAS.

WROUGHT IRON PIPE AND FITTINGS,

PLUMBERS' MATERIALS

Factory, Paterson, N. J. 56 John Street, N. Y.

BLACK AND TINNED IRON RIVETS.



W. P. TOWNSEND & CO.,

PITTSBURGH PA.,

Manufacturers of every description of First Quality

RIVETS.

HENRY B. NEWHALL, 105 Chambers St., New York Agent.



WM. H. HASKELL & CO.,

Pawtucket, R. I.

MANUFACTURERS OF

COACH SCREWS,

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

FORGED SET SCREWS AND TAP BOLTS.

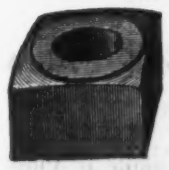


HENRY B. NEWHALL, 105 Chambers St., New York Agent.

STANDARD NUT CO.,

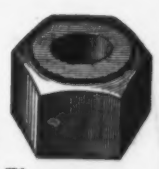
Pittsburgh, Pa.,

MANUFACTURERS OF



HOT PRESSED

Square & Hexagon Nuts,



R. R. FISH BARS, BOLTS, SPIKES, RIVETS, &c.

HENRY B. NEWHALL, 105 Chambers St., New York Agent.

Philadelphia "STAR" Bolt Works.

NORWAY IRON FANCY HEAD BOLTS,

Carriage & Tire Bolts. Star Axle Clips, &c.

TOWNSEND, WILSON & HUBBARD, 2301 Cherry Street, Philadelphia, Pa

MACHINE, PATCH AND STAY BOLTS.

NUTS Cold Punched. WASHERS

HOOPES & TOWNSEND,

KEYSTONE BOILER RIVETS

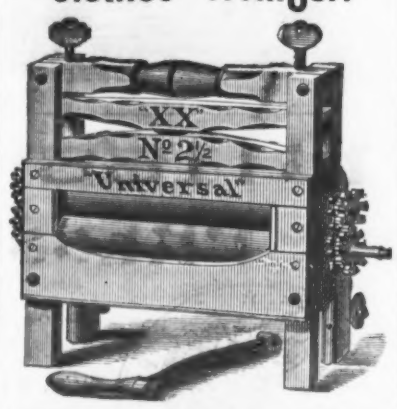
PHILADELPHIA.

WOOD SCREWS, TANK RIVETS, FLAT LINK CHAIN.

THE "OLD RELIABLE"

UNIVERSAL

Clothes Wringer.



Improved with Rowell's Double Cog-Wheels on both ends of each roll.

Over 500,000 sold!

And now in use, giving "Universal" satisfaction.

EVERY WRINGER WARRANTED.

Be sure and inquire for the "Universal."

Sold by the **Principal Jobbers in Hardware and House-Furnishing Goods** everywhere.

Metropolitan Manufacturing Co.,

32 Cortlandt St., New York.

STEAM PUMPS,

STEAM ENGINES,

Air Compressors,

HOISTING ENGINES.

The Norwalk Iron Works Co.,

SOUTH NORWALK, CONN.

COMBINED SHEAR & PUNCH



A Bench Tool made in Two Sizes.

This tool can be secured to a bench. It is a very effective and convenient little tool. Prices very low. No. 1 cuts ¼-inch iron; No. 2 cuts 3-16 to ¼ inch iron.

Manufactured by

J. E. HULL,

No. 137 East Pearl St., Cincinnati, O.

end for Circular and Price List.

ECLIPSE.



Fat. Aug. 5, 1879.

ELEVATOR BOLTS.

Every Bolt made from the best of Norway Iron. Cups placed on quickly. Rusty Bolts can be removed without injury. Broad, flat head which gives smooth bolt surface.

For sale by the trade.

Indianapolis Machine & Bolt Works

SOLE MAKERS,

Indianapolis, Ind.

NATIONAL BOLT CUTTERS

GUARANTEED A HEAD OF ALL OTHERS FOR MANUFACTURERS & MACHINISTS

SEND FOR CATALOGUE

Cor. Bond & Rockwell CLEVELAND, O.

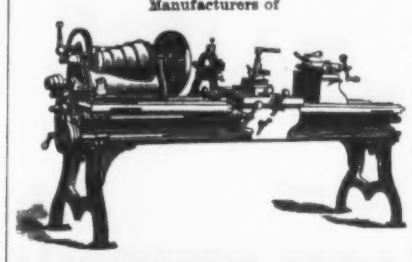
SEND FOR PAMPHLET. THE FAR-FAMED TEN THOUSAND IN USE

AMERICAN LUBRICATOR.

AMERICAN LUBRICATOR CO. DETROIT, MICH. U.S.A.

P. BLAISDELL & CO.,

Manufacturers of



MACHINISTS' TOOLS,

Blaisdell's Patent Upright Drills,

With Quick Return Motion.

Engine Lathes, Planers, Boring Mills, Gear Cutters and Hand Lathes.

WORCESTER, MASS., U. S. A.

Holt Portable Forge,

ALL STYLES AND SIZES.



Furnaces for Jewelers and Assayers.

MANUFACTURED BY

HOLT MANUFACTURING CO.,

Champlain St., Cleveland, O.

New York Office, 79 and 81 Reade St.,

F. PORTER THAYER, Manager.

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American" ₩ ℔ 9½c. dis 20 %
Apple Parers.
Reading "78" per doz., $7.40
Reading "76" per doz., 6.40
Reading "72" per doz., 5.00
Goodell Turn Table per doz., 5.50
Goodell Improved Turn Table per doz., 7.00
Goodell Family Corer and Slicer per doz., 7.00
Hudson's Improved "No" per doz., 6.50
Goodell Lightning per doz., 6.00
Aiken's Tools dis 40&10 %
Anvil & Vise.—
No. 1, $6.25; 2, 4.25; 3, 3.50 each dis 25 %
Augurs & Bitts.—Snell's Auger dis 40 %
L'Hommedieu's Shid Augers dis 15 %
Jenning's Bitts dis 10&10&10 %
Cook's Bitts dis 40&10 %
Stearns Hollow Augers No. 3 ₩ doz. $48.00
Sheparuson's Double-Cut Bitts dis 45 %
" Gimlets dis 40 %
Stearn's Extension Hollow Augers per doz $30.00
Bonney's " " " per doz 30.00
Pierce's Bitts dis 35 %
Griswold " dis 40 %
Axes.—Blue Jackets per doz 10.00
Red Cross per doz 9.00
" Handled per doz 10.00
Dowse " Boys' dis 30 %
Ax Handles.—
Oak Extra, 31 in., No. A ₩ doz $2.00
" 34 in., No. A ₩ doz 2.25
" 31 in., No. B ₩ doz 1.50
" 34 in., No. B ₩ doz 1.75
" 31 or 34 in., No. C ₩ doz 1.15
Axle Clips dis 45 %
Balances.—Chatillon's dis 14&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers) per ft. 3c
" Half-Round per ft. ⅜, 5c ½, 6½c
Wrought " perft, ⅜, 4c ½, 5c; ⅝, 6c
Bells.—Connel's Crank Gong dis 40&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1879 dis 33⅓ %
Brass " " 1879 dis 25 %
Blind Fasts.—Lock Fasts ₩ C sets $6.00
No. 6 Fasts ₩ C sets 6.50
Veazie Fasts ₩ C sets 6.50
Shedd's ₩ C sets 7.00
Blind Hinges.—Mall. Hook, 3 holes ₩ C sets 8.50
Brad Awl Handles.—
Phœnix Adjustable ₩ doz $2.00
Bolts.—Norway Iron Carriage dis 65 %
Common " dis 70&10 %
Borax.—Refined ₩ ℔ 11½c
Boring Machines.
Eagle Upright each, $5.50 list } dis 40 %
Eagle Angle each, 6.75 list }
Snell Augers ₩ set 4.70
Braces.—Barber's dis 40 %
Spofford's dis 40 %
Backus' dis 50 & 10 %
Brackets Saws.—Holly Scroll Saw each, $2.50
Demas Lathe and Scroll Saw " 6.50
Bracket Saws, extra quality, to No. 6 ₩ gro $0.75
Steel Frame, with patterns ₩ doz 6.50
Lester dis 30 %
New Rogers, all iron dis 25 %
Bracket Saw Blades.
Griffith's patent ₩ gross 7.50
Brackets.—H. B. & M. Flower Pot dis 50&10 %
Bronzed Shelf, M. B. & D newlist dis 40 %
Store Shelf dis 70 %
Bronze Hardware.— dis
Butts.—Union Fast Joint dis 40&10 %
" Loose " dis 50&10 %
" Japanned Acorn dis 55&10 %
" Silvered " dis 55&10 %
" Boston Finish dis 75&10 %
Union Spiral Spring dis 40 %
Wrought Brass dis 45 %
Carriage Bolts.—Eagle Norway dis 60 %
Common dis 70&10%
Carriage Jacks.
"Climax" No. 1 ₩ doz $20.00
" No. 1½ " 15.00
" No. 2 " 13.50
"Universal" dis 25 %
" No. 1 each, $2.00
" No. 2 " 3.00
" No. 3 " 6.00
" No. 4 " 6.00
" No. 5 " 6.50
Cartridges.—U. S. Cartridge Co dis 60&10 %
Cards.—Watson's makeHorse and Curry dis 10 %
" Cotton dis 10 %
" Wool dis 10 %
Casters.—Bed and Table dis 33⅓&10 %
Chain.—Traces 6½, 10, 4, straight ₩ pair 45c
" 6½, 10, 4, twisted ₩ pair 50c
" 7, 12, 2, " ₩ pair 75c
Coil 3-16 ₩ ℔ 11 c
" ¼ ₩ ℔ 8½c
" 5-16 ₩ ℔ 8 c
" ⅜ ₩ ℔ 7 c
" 7-16 ₩ ℔ 6½c
" ½ ₩ ℔ 6½c
Chalk.—White, Carpenter's ₩ gross 800
Red, Carpenter's ₩ gross 800
Blue " ₩ gross $1.00
Chisels.—Hart, Bliven & Mead, Framing dis 55 %
Underhill, Framing dis 20 %
Buck's Chisels dis 30 %
Clothes Line.—
Galvanized Wire, 120 feet each ₩ doz $1.50
Coat Hods.—"Dover."—Galvanized, new list dis 50 %
Japanned, new list dis 50 %
Coffee Mills.—New list dis 35 %
Copper Rivets dis 4- %
Cocks.—Brass, L. F. & C dis 40 %
Cordage.—Manila, usual trade dis 10 " ₩ ℔ 12½c
Jute ₩ ℔ 11c
Cow Ties. dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle ₩ doz $3.00
No. 34, 3 ft. " " with snap ₩ doz 3.80
No. 40, 3½ ft. " " with toggle ₩ doz 3.90
No. 44, 3½ ft. " " with snap ₩ doz 4.10
No. 50, 4 ft. No. 4 " with toggle ₩ doz 4.50
No. 55, 4 ft. " " with snap ₩ doz 4.75
No. 60, 4½ ft. " 3 " with toggle ₩ doz 5.50
No. 66, 4½ ft. " 4 " with snap ₩ doz 5.75

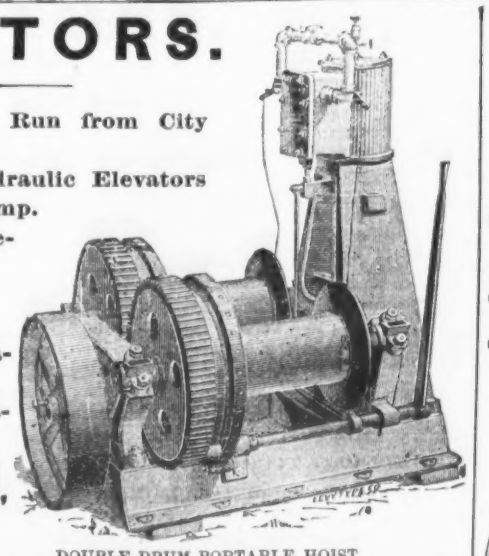
Crow-Bars. Cast Steel ₩ ℔ 8c
Iron Steel Pointed ₩ ℔ 5c
Cutlery.—Pocket, American Shear Co.'s dis 40 %
Butcher Knives, "Woods," Lap Bolster, Square Handle dis 20 %
Steak Knives dis 10 %
Lap Bolster, Oval Handle dis 10 %
Sticking dis 20 %
Skinning dis 20 %
Butcher, Common Round Handle, "Woods" dis 20 %
Shoe Knives, "Woods" dis 10 %
Dividers.—Cook's dis 25 %
Dog Collars ₩ 20
Dog Muzzles.—Automatic dis 10 %
Door Springs.—Torrey's Rod ₩ doz $2.
Imitation Torrey's Rod ₩ doz $1.7
Gem Coil net list
Crown ₩ doz $1.20
Warners ₩ doz $2.00
Door Stops.—"Thurston's" dis 25
Drawer Knobs.—"Thurston's" dis 45
Drills.—Morse Bitt Stock dis 25 %
Morse Straight Shank dis 30 %
Emery.—Wellington Mills ₩ ℔ 10¢
The Alden Emery Co ₩ ℔ 10c
Turkish in 10 ℔ cans ₩ ℔ 8c
Enamelled Ware.
Standard Mfg. Co. Kettles dis 40&10 %
" Sauce Pans dis 25 %
Felloe Plates.—Wrought ₩ ℔
Files.
American File Co dis 30
Nicholson " dis 30
Fluting Machines.
Knox list, $1.00 dis 10 %
American list, $3.40 dis 10 %
Forks. W. C. & Co., Manure dis 40
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's per doz 880
Glass Cutters.
Combination Glass Cutter and Knife Sharpener ₩ doz $1.00
Grub Hoes.—K. P. & Co.'s No. 2, 11.40 ₩ doz. dis 30 %
Hammers.—Maydole's dis 10 %
Hammond's (new list.) dis 20 %
Hangers & Rollers.—Anti-Friction dis 50&10 %
Acme Rollers dis 50 %
Climax dis 50 %
Common Hangers dis 30&10 %
" Rollers dis 35&10 %
Hand Screws. dis 10 %
Hatchets.—C. F. Dowse new list dis 30
Underhill dis 25
Hay Knives.—Lightning ₩ doz $18.00 ne
Fisher's Patent ₩ doz @14.00
Hinges.—Strap and T (new list) dis 40&10 %
Providence Plate ₩ ℔ 6c
Wrought Screw Hook ₩ ℔ 6c
Hoes.—W. C. & Co.'s dis 40 %
Hooks and Staples.—Brewers' dis 40 %
Horse Nails. No. 6 7 8 9
National Finished .23 .21 .20 .19 dis 20 %
Putnam Pointed .26 .24 .23 .22 10 %
Horse Nails.—Bridgewater dis 25 %
No. 6 2½; No. 7, 2½, No. 8, 20; No. 9, 19.
Ice Cream Freezers.—"Packer's" dis 40 %
Knobs.—"Norwalk" New list dis 50 %
Silver Glass dis 50&10 %
" Bell Pulls dis 50&10 %
Lanterns.—Tubulars, No. 0 ₩ doz 8.00
Railroad, Oil, No. 43 ₩ doz 9.00
Triangular ₩ doz 4.00
Hurricane dis 20 %
Lead.—Sheet ₩ ℔ 7 c
Pipe ₩ ℔ 0½c
Locks.—Norwalk Genuine Bronze Goods dis 50 %
Eagle Cabinet dis 10 %
" Trunk list net
W. Wilcox & Co., Padlocks dis 45 %
American Lock Co.'s Steel Key dis 33⅓ %
Manure Forks.—W. C. & Co dis 40
Mattocks.—K. P. & Co., Long Cutter, 16.00 ₩ doz.
K. P. & Co., Short Cutter, 15.00 ₩ doz. dis 30 %
" Pick " 15.00 ₩ doz. dis 30 %
Measuring Tapes.—Eddy's dis 20
Meat Cutters.—Miles' Challenge dis 30 %
Hale's, (New list) dis 40 %
American dis 25 %
Money Drawers.—Tucker's Alarm ₩ doz $32.40
Mouse Traps.—Delusion ₩ doz 2.00
Novelty ₩ doz 1.75
Nails. ₩ keg, 3.15 rates
Oilers.—Zinc and Tin dis 45 %
Brass and Copper dis 5⅓ %
Ox Bows.—Extra finished and varnished list net
1¼ in., ₩ doz. pair $5.75 | 2 in., ₩ doz. pair $8.00
1⅝ in., " " 8.00 | 2½ " " 11.00
Padlocks.—W. Wilcox & Co.'s dis 45 %
Miller's Brass ₩ doz $7.50
Paper.—Tarred Sheathing ₩ ℔ 2½c
Dry Sheathing ₩ ℔ 2½c
Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔ 12.00 dis 30 %
" " 6 to 7 ℔ 13.00 dis 30 %
Planes.—Greenfield Tool Co dis 25 %
N. Y. Tool Co dis 35 %
English Iron dis 20 %
Bailey's dis 20&10 %
Plated Ware.—Rogers & Bro dis 33⅓&5 %
Pliers.—Vom Cleff & Co.'s net list
Button's Wire Pliers dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co dis 60&10 %
Pocket Knives.
American Shear Co.'s dis 33⅓&10 %
Potato Diggers.—W. C. & Co. reduced list dis 40 %
Pulleys.
Acme or Excelsior, 1¾ in. per doz 2.50
" 2 in. " 2.60
Pulley Blocks dis 40 %
Pumps.—Union Manufacturing Co.
Iron Cistern dis 35 %
" Pitcher Spout dis 35 %
Copper dis 30 %
Rivets.—Black dis 40 %
Carriage in 10 ℔ papers dis 20 %
Copper dis 45 %
Razor Strops.—Torrey's Full line.
Rules.—Stanley Boxwood, dis 60&10 %
" Ivory dis 50&10 %
Sadirons.—Common ₩ ℔ 3½c
Laundry ₩ ℔ 6½c
Tailor's Geese ₩ ℔ 6c
Enterprise, "Potts" dis 30 %
Sash Locks.—King & Hutchinson's, new list dis 40 %
Sandpaper.—Baeder & Adamson dis 25 %
M. B. & D. dis 25&5 %
Sash Weights.—Patent Eye ₩ ℔ 1¾c
Saws.—Hand Saws, Disston's dis 20 %
Wheeler & Clemson dis 20 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1 ₩ foot 40c
" Champion " ₩ foot 40c
Disston's, Common " ₩ foot 44c
" Gt. American " ₩ foot 44c
Boynton's Lightning " ₩ foot 50c
M. B. & D., Rand Saws dis 25 %
W. M. & Co.'s Circular Saws dis 35 %
Richardson Bros dis 25 %
Saw Blades.—Disston dis 25 %
W. M. & C. dis 15 %
Welch & Griffith, Extra ₩ doz $8.40
" " No. 2 ₩ doz 7.00
Scales.—Fairbanks dis 20 %
Screws.—Aiken's Flat-Head Iron dis 45 %
American Flat-Head Iron dis 45 %
" " Brass dis 35 %
" Round-Head " dis 30 %
" " Iron dis 35 %
Grilley " Nickel-plated Common dis 50
Scythes.—Clippers, in boxes ₩ doz $9.00
Shaves.—Kimball's ₩ inch 7½c
Watrous dis 15 %
Shears.—American Shear Co., new list dis 70 %
Shot.—Tatham's ₩ ℔ 7½c
Shovels.—O. Ames, new list dis 10 %
O. Ames, other brands, new list dis 10 %
M. B. & D. dis 10 %
Oxford Birmingham Pattern dis 40 %
Sinks.—Magee Patent dis 45 %
Snow Shovels.—Malleable tips ₩ doz 4.00
Skates.—Union dis 25 %
Acme dis 20 %
Stock and Dies.—King's dis 10&5 %
Tacks.—A. Field & Son's dis 20&10 %
Pittsfield dis 2-&10 %
Swedes Tinned 35&10 %
Swedes Iron 20&10 %
Gimp and Lace 20&10 %
Copper Tacks 25&10 %
All balances on list 15&10 %
Traps.—Oneida, Genuine dis 33⅓ %
Oneida, Imitation, M. & N dis 50 %
Blake's dis 40 & 10 %
Vises.—Simpson's Adjustable dis 20&5 %
Howard Vise Co dis 15 %
Prentiss' dis 20 %
Weather Strips.—Packar's ₩ doz $4.50
Browne's Flexible Rubber dis 30 %
In 20 feet boxes; No. 1, ½ in. wide, ₩ yard, 10c.; No. 2, ⅝ in., 14c.; No. 3, ¾ in., 20c.; No. 4, 1 in., 24c
Black Walnut Spring Weather Strips ₩ doz. $3.00
Window Springs. dis 20 %
Babcock's No. 3 ₩ gross $ 6.25
" 4 ₩ gross 4.15
Wire Cloth.—"Clinton" ₩ ft. 2½c
Wire Fence.
Scutt's Patent, Painted ₩ ℔ 8½c
" Galvanized ₩ ℔ 9½c
Wire Goods.—Gate Hooks and Eyes, &c new list. dis 60&10 %
Wrenches.—A. G. Coe's dis 50 %
Girard Mfg. Co dis 50&10 %
Girard Agt. dis 60 %
Wringers.—Universal, No. ₩ doz $63.00
Universal, No. 1½ ₩ doz 60.00
Novelty, No. 10. ₩ doz 60.00
" No. 2 ₩ doz 63.00
" No. 22 ₩ doz 67.00
Excelsior, No. A ₩ doz 70.00
" No. B ₩ doz 83.00
" No. CC ₩ doz 100.00
Novelty Set Tub, E ₩ doz 66.00
Eureka ₩ doz 54.00
Keystone, Wood Frame No. 1½ ₩ doz 51.00
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Withington, Cooley & Co.—Hose, Rakes, Forks &c. dis 40 & 5. Special rate for Export.

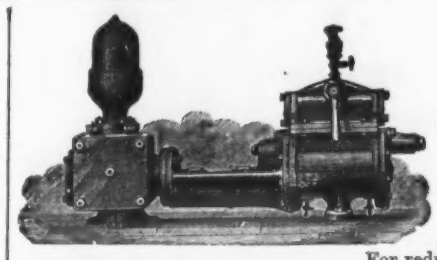
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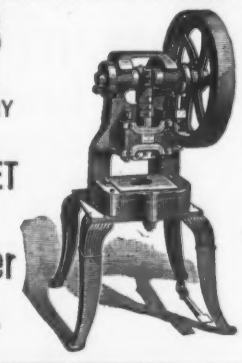
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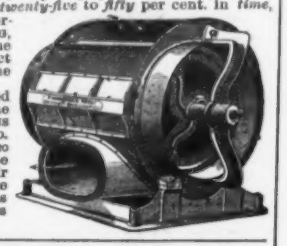
PARIS EXPOSITION, 1878.



THE MACKENZIE PATENT
CUPOLA & BLOWER.
Send for circular to
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PROPRIETORS, 21 Cortlandt St., New York.

This Cupola has made a great revolution in melting Iron. It differs from all others in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all points. Above one ton capacity per hour, they are made *oval in form*. This brings the blast to the center of the furnace with the *least resistance* and *smallest* possible amount of power, and in combination with the continuous Tuyere causes complete diffusion of the air throughout the furnace, and uniform temperature, melting *ten* or *fifteen tons* an hour with the pressure of blast required to melt *two* or *three tons* in an ordinary Cupola. It also enables us to save very largely in *time* and *fuel*, the experience of our customers showing a gain of *twenty-five* to *fifty* per cent. in *time*, and *twenty-five* to *forty* per cent. *fuel* over the ordinary Cupola, and a BETTER QUALITY OF CASTING, especially in light work. This is due to the thorough diffusion of the air and more perfect combustion, extracting less carbon from the iron, making a softer and tougher casting.

We manufacture these Cupolas of any desired capacity, numbered from 1 to 20, inclusive, the numbers indicating the melting capacities in TONS PER HOUR—No. 1, one ton, ; No. 2, two tons; No. 3, three tons per hour, and so on up to 15, or 20 tons. We have *improved* the *construction* of these Cupolas in every way, have increased their strength and durability, and sought to make them as convenient for working and repairs as our own and the experience of our customers could suggest.



MAGIC PLATE FOR PIPE.



No. 1 threads and cuts off			⅛ to ¾
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No. 3	"	"	½ to 2
No. 4	"	"	1½ to 3
No. 5	"	"	2½ to 4
Size A threads bolts			¼ to ¾
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MACHINES
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COMPRISING
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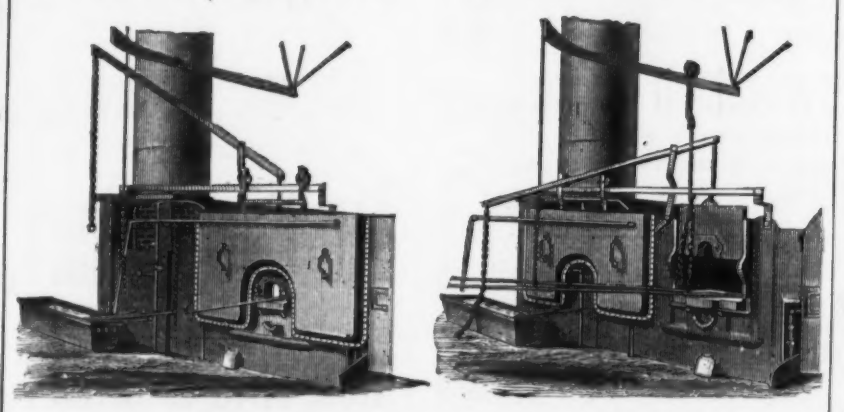


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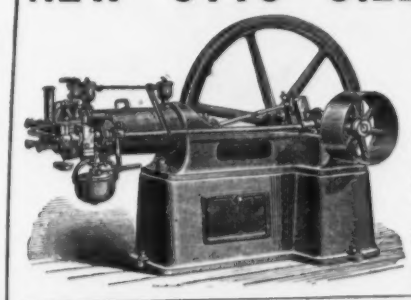
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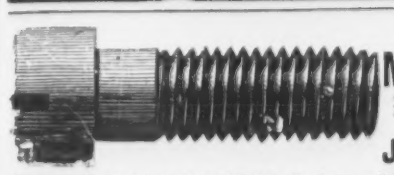


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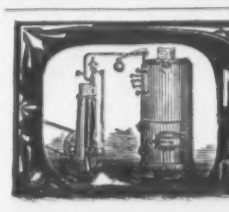


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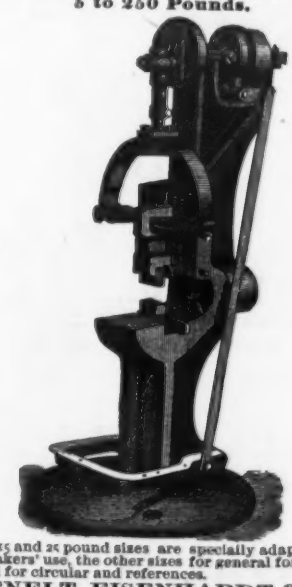
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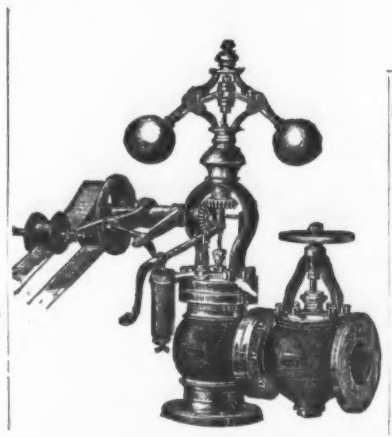
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3	45.00	52.00	3.00	8.00
3¼	54.00	62.00	3.25	9.00
4	64.00	73.00	3.50	10.00
4½	74.00	84.00	3.75	11.00
5	84.00	95.00	4.00	12.00
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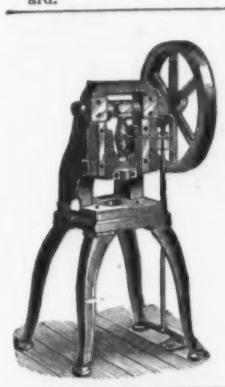
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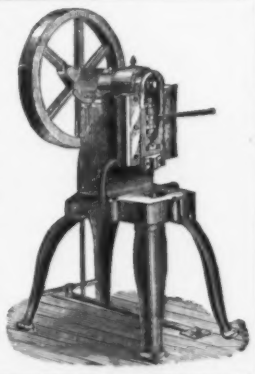
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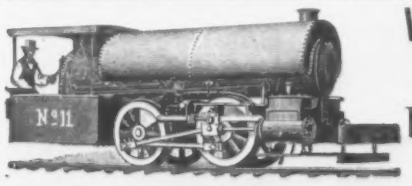
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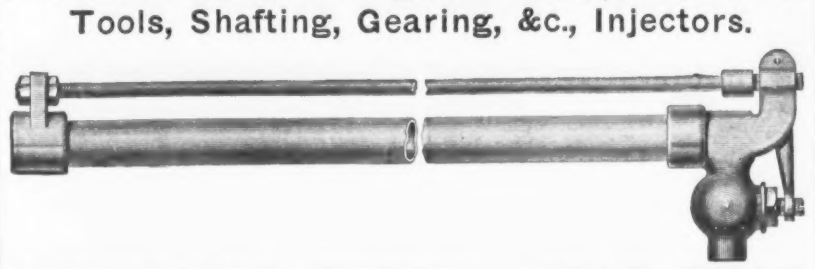
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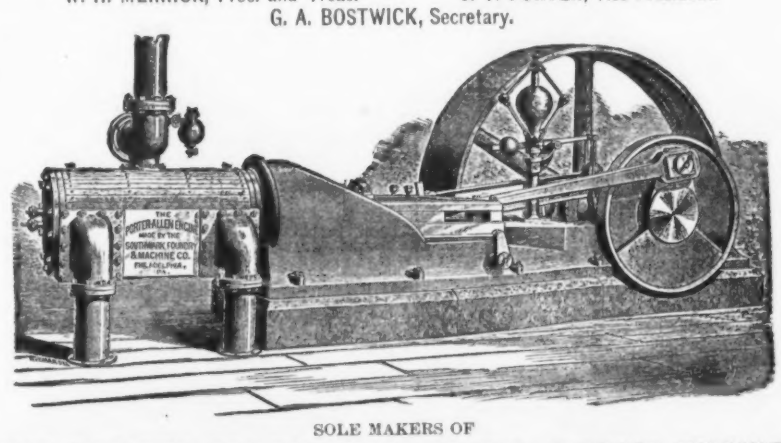
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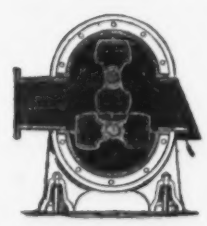
WILLIAM COOKE,

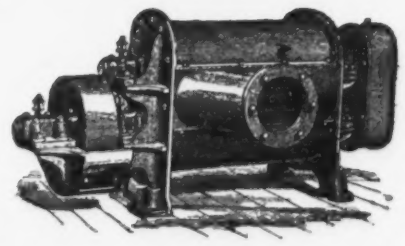
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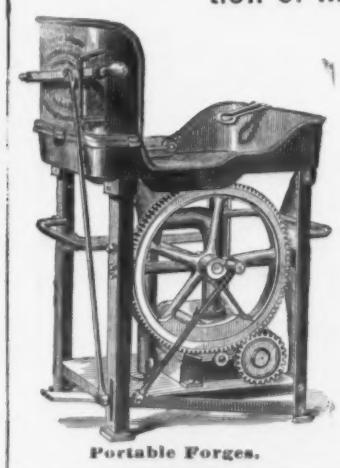
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ROOT'S NEW IRON BLOWER,





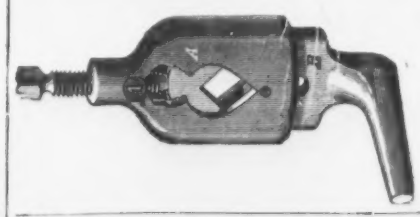
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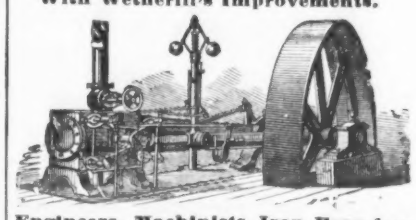
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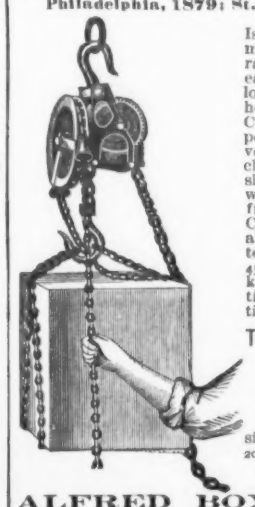
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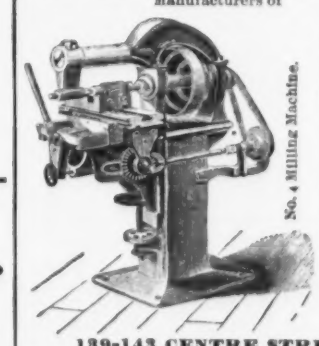
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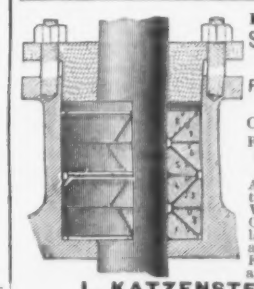


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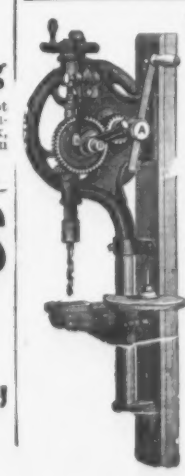
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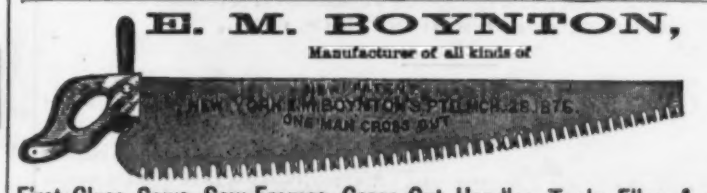
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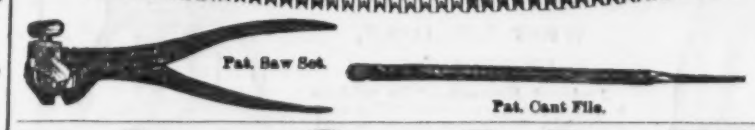
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